

## ABSTRACT

Robin Owens Proctor. A CASE STUDY ANALYSIS OF THE EFFECTS OF LEARNING STYLES SELF-AWARENESS AMONG COMMUNITY COLLEGE DEVELOPMENTAL STUDIES STUDENTS. (Under the direction of Dr. Vivian W. Mott) Department of Counselor and Adult Education, December, 1997.

The purpose of this thesis was to illustrate the effects of learning styles self-awareness on how community college developmental studies students approach the learning process. Learning styles are the ways by which individuals prefer to acquire, process, and utilize information. Most of the current literature and research on learning styles has focused on high school or traditional age college students and has used learning styles assessment primarily for matching teaching styles to students' learning styles. However, because of the open-door policy of the community college system, more and more non-traditional students enter with educational deficits; consequently, research was needed which focused particularly on them. This research showed the importance of students learning about themselves and utilizing style-appropriate study methods to be more at-ease in educational situations, thereby improving their attitudes toward learning and their potential persistence in educational endeavors. To find out how aware students were of their own learning styles, this research employed qualitative case study methodology, featuring document reviews, interviews, and learning styles assessments. The four purposefully selected participants were interviewed and received learning styles assessments and customized study strategies. The initial findings indicated that the participants were limited in their degree of self-awareness as learners and in their ability to express their thoughts about learning. Following

the learning styles strategies recommendations, subsequent findings from the second interviews showed that the students gained self-awareness, improved their use of learning strategies, and had an increase in self-esteem. Additional findings included that the students needed supportive people and a feeling of connectedness with the learning environment and that the participants' previous educational experiences shaped how they reacted to current learning situations. This research has important implications for adult learning theory and educational practice. Students in the community college developmental studies program can benefit from learning how to learn and from gaining the self-awareness and self-esteem that may come with learning styles assessment and strategies counseling.

A CASE STUDY ANALYSIS  
OF THE EFFECTS OF  
LEARNING STYLES SELF-AWARENESS  
AMONG  
COMMUNITY COLLEGE DEVELOPMENTAL STUDIES STUDENTS

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by Robin Owens Proctor  
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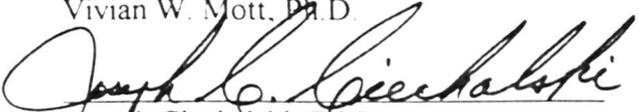
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Robin Owens Proctor

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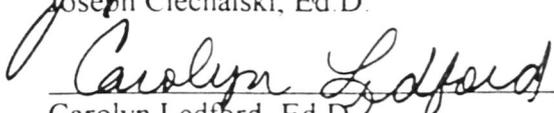
DIRECTOR OF THESIS

  
\_\_\_\_\_  
Vivian W. Mott, Ph.D.

COMMITTEE MEMBER

  
\_\_\_\_\_  
Joseph Ciechalski, Ed.D.

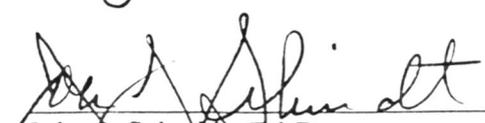
COMMITTEE MEMBER

  
\_\_\_\_\_  
Carolyn Ledford, Ed.D.

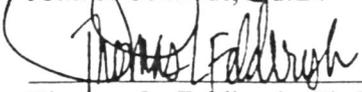
COMMITTEE MEMBER

  
\_\_\_\_\_  
Elizabeth S. Knott, Ed.D.

CHAIR OF THE DEPARTMENT OF  
COUNSELOR AND ADULT EDUCATION

  
\_\_\_\_\_  
John J. Schmidt, Ed.D.

DEAN OF THE GRADUATE SCHOOL

  
\_\_\_\_\_  
Thomas L. Feldbush, Ph.D.

6-18-77

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## CHAPTER I

### INTRODUCTION TO THE RESEARCH

Most educators agree that learning style refers to "a student's consistent way of responding to and using stimuli in the context of learning" (Claxton & Ralston, 1978, p.7). Learning style includes but is not limited to cognitive processing, such as analytical thought, and perceptual modalities, such as preferring to listen instead of read. Awareness of learning styles is important for students at all levels. Research has shown that "students who learn about their own style achieve higher grades and have more positive attitudes about their studies, greater self-confidence, and more skill in applying their knowledge in college courses generally" (Claxton & Murrell, 1987, p. 54).

"Two important types of self-knowledge are knowledge about how we learn and knowledge about our prior knowledge of the content or subject being studied" (Weinstein & Meyer, 1991, p. 18). Learning styles awareness is a major part of self-knowledge since a person's learning style includes subject preferences and presentation techniques. For example, a student may have a strong preference for art if his/her learning style is visual and kinesthetic or an affinity for class discussions if his/her style is social and auditory. Knowledge of learning styles "help[s] students become more knowledgeable about their own preferred ways of learning and help[s] them develop strategies for coping with classes that are difficult for them" (Claxton & Murrell, 1987, p. 63). Knowledge of learning strategies is also very important. Cognitive learning strategies are goal-directed and deliberately used for improving learning in specific courses. To be successful, a student needs to know his/her learning style and the strategies that may help him/her learn. For example, an auditory learner may do well in a lecture course, while a visual learner may need added strategies for

effective learning in the same course, such as audiotaping the lectures to eliminate the need for hurried note taking or creating visual study tools like flashcards or puzzles to provide added reinforcement.

Students with little self-awareness may set unrealistic goals and set themselves up for failure. Self-awareness of learning styles, therefore, is useful in goal-setting and academic planning to help increase confidence and improve self-esteem (Weinstein & Meyer, 1991). Students may need help in setting realistic goals.

Setting unrealistic goals does not help one reach them. In fact, unrealistically high goals may set up a failure that makes it even harder to perform the next time a similar situation arises.... For example, if a student ... knows very little about [history in general], does not enjoy studying history, finds it difficult to study subjects he does not like, ... it would be unrealistic for him to set a goal of getting an A on the upcoming history midterm exam. (Weinstein & Meyer, 1991, p. 18)

For students with self-awareness and an understanding of learning strategies, goal-setting becomes much easier. Therefore, their self-esteem and their potential for learning increase.

According to Weinstein and Meyer (1991), successful students know what subjects are easier for them, how school fits in with other life goals, and what learning styles they prefer. Therefore, gaining an understanding of learning styles can be helpful to students who are making educational choices. Further, students who are aware of their own learning styles function more confidently and effectively and tend to take more responsibility for their own educational choices and learning (Claxton & Murrell, 1987). For example, they are more at-ease with educational situations and seek out ways to improve their

learning. Self-awareness of learning style and the subsequent responsibility level it generates are vital to students' success at the community college level.

Some community college students have been prepared for learning by parents or positive educational opportunities, such as attending school in a particularly supportive learning environment or having teachers who showed genuine caring for their learners. However, since many students at community colleges are first-generation college students or are adults returning to school after many years, they tend to be striving to overcome barriers to learning and may be under-prepared and under-informed about their own learning styles or ability. Developmental studies students, those who score below college level on the placement tests at the community college, tend to be unrealistic in their expectations of themselves, wanting too much too fast or completely misjudging their own potential.

Because community college developmental studies students are less familiar with learning dynamics in general, they may require additional guidance in order to gain the self-awareness necessary for success. Given style-appropriate learning tools and strategies, students can achieve greater success and exercise greater control over their own learning rather than passively waiting to be taught. Self-awareness or self-knowledge and control over one's own educational path are important for successful completion of college course work. Additionally, because developmental studies students face longer time frames for degree completion (often taking 3 to 4 years attending full time to achieve a 2-year degree) (R. Semple, personal communication, September 11, 1997), they may be at greater risk of dropping out than other students at the community college. Therefore, they may benefit from

learning styles awareness to improve self-esteem and style-related learning strategies to increase retention and success (Claxton & Murrell, 1987).

### **Problem Statement**

Previously, information on learning styles (LS) has been used for description and prescription -- providing data to instructors about their students' learning preferences and matching instructional strategies to learning styles. The application of LS awareness has not focused on students' adaptation to the various instructional techniques. Further, instructors have been expected to use LS information to modify their teaching styles to benefit students. At the community college level, however, instructors are not given adequate time, resources, or training to carry out these modifications. Students are expected to learn from their instructors despite the limited range of styles used in the classroom.

If community college developmental studies students were more aware of their learning styles, then they would be better equipped to learn from a variety of instructional styles and may approach each learning situation with more self-confidence. This self-awareness would increase students' abilities to set high, but realistic goals for themselves. Guidance and training in learning styles could markedly improve students' potential by centering them on realistic but attainable goals. It may, as a result, increase students' retention in school and improve their self-esteem in the process.

### **Purpose of the Study**

The purpose of this study was to examine the effects of self-awareness of learning styles on how community college students approach learning situations. The goal was to find out how aware students were of their learning styles and how adding to this awareness might have changed their attitudes and

approaches to learning situations. The major emphasis was on increasing the students' levels of responsibility and self-esteem regarding learning. The following specific questions were used in this research.

1. To what degree were community college students aware of how they learn best?
2. To what extent did knowledge of learning styles impact students' feelings about their own learning abilities and their potential for success?
3. How did self-awareness of learning style affect how students approached learning situations and the learning process?
4. In what ways could students use their preferred learning styles to maximize their learning potential?
5. To what degree could students be taught to adapt to alternate learning styles?

### **Significance of the Study**

Awareness of learning styles can help adult developmental studies students feel more at ease in school and job environments and better utilize the educational opportunities available (Smith, 1982). Styles can be used to provide greater insights and create additional opportunities. Self-awareness of style also can help to improve study skills and habits. Knowledge of learning style in general helps students improve their self-esteem because it validates their uniqueness, and it helps students persist in their learning endeavors since they can improve their study strategies with style-appropriate techniques (Marshall, 1990).

Effective learners must be aware of how their prior knowledge, learning styles, and actions alter their perceptions of information received and how they

must actively seek learning. Although empowering students to learn may increase self-esteem and improve retention and achievement rates, some students are not prepared to take this control. "Many students are under the impression that their task is to passively absorb what the teacher says in lecture, what is in the textbook, what they see in lab, and what they practice in homework" (Weinstein & Meyer, 1991, p. 28). However, students must be taught how to become active learners and to accept more power over the learning process. Learning potential can be increased for any student who actively seeks it. Learning styles awareness can provide students with more feeling of control over their own learning (Cook, 1989), thus helping students become more active in the learning process.

At the community college level, it is vital for students to be empowered with the ability to learn. It is impractical for instructors to fully customize the way they teach since they have the students in their classes for only a semester at a time and because they may teach over 200 different students per year. Certainly, instructors should be expected to use a variety of methods like lecture and visual aids, but not all students can learn effectively through those methods alone. Therefore, educators and counselors must help students learn how to learn and how to use strategies that fit their learning styles.

Active learning is characterized by utilizing the learning strategies that fit individual learning styles. An active learner does not just wait for the teacher to impart knowledge but seeks it through learning activities that are more self-directed - such as creating materials for study or meeting as a small group to review. "Learner control is often advocated because it permits the spontaneous assertion of learners' natural (and therefore presumably best for them) approach to learning tasks" (Candy, 1991, p.53). This study attempted to

provide the groundwork for successfully using learning styles information to empower community college students with such control.

Finally, the current literature includes an immense amount of information about modifying instruction based on students' learning styles. Although Claxton and Ralston (1978) indicate that "the student, armed with greater knowledge about how he learns, is in a better position to structure his educational endeavors" (p.3), none of the research clearly shows how students actually can take control of their own learning or the value or implications of that control. This research addresses these gaps in the literature.

### **Summary**

Because of the open-door policy inherent to the community college system, there is a great potential for students attending who are under-prepared for the college learning situation. These academic challenges are especially problematic for the developmental studies students who may be less aware of learning styles and who may feel less responsible for their learning potential. Learning styles assessment, strategies, and counseling can bridge the gap for these learners, providing them with the tools they need to accept responsibility for their own learning and to take control of their educational endeavors. Awareness of learning styles and use of style-specific learning strategies may increase self-esteem, retention in school, and self-confidence.

## Definitions of Relevant Terms

Certain terms used in this thesis have been defined for clarity.

Cognitive learning strategies : Techniques or tactics that improve learning, such as memory enhancing devices and learning tools.

Developmental studies students: Students whose college placement test scores place them into two or more developmental (remedial) English, reading, or math courses.

First-generation college students: Students whose parents did not earn four-year college degrees.

Learning style: Perceptual modality preferences and processing style, which include preferred ways of receiving, processing, and responding to information. Social orientation is also a dimension of learning style.

Learning how to learn skills: Any of the skills needed by an individual to learn successfully, such as curiosity, deductive and inductive reasoning, analysis, synthesis, and evaluation.

Learning styles instrument (LSI): Any of the assessment tools used to determine a person's preferred learning style(s). Examples include the Kolb Learning Style Inventory, Productivity Environmental Preference Survey (PEPS) (1989), and the Center for Innovative Teaching Experiences (CITE) Learning Styles Instrument (1976).

Retention: The act of a student maintaining a grade point average above 2.0 and remaining in school through the completion of educational goals.

## CHAPTER II

### REVIEW OF THE LITERATURE

The purpose of this study was to examine the effects of self-awareness of learning styles on how community college students approach learning situations. In order to provide background information for this research, this chapter reviews the following: (a) descriptions of learning styles; (b) types of learning styles assessments; (c) importance of learning styles knowledge for learners; (d) current research on learning styles-based study habits of college students; and (e) classroom and counseling applications of learning styles. This chapter concludes with a brief summary.

#### **Descriptions of Learning Styles**

There are differing opinions about the term *learning style*. Some researchers say that it "refers to a student's consistent way of responding to and using stimuli in the context of learning" (Claxton & Ralston, 1978, p.7) or that it refers to cognitive style or "ways that individuals perceive and conceptualize their environment" (Morgan, 1997). Others view it holistically, including personality, information processing, social orientation, and/or instructional preferences. Although all aspects of learning style are important, this research focuses on a composite form combining social orientation (group or individual), perceptual modalities (auditory, visual, kinesthetic) and processing style (concrete or abstract thinking), with consideration given to classroom presentation preferences.

Researchers have identified many different models of learning styles. The following learning style models have been selected because they reflect characteristics of learning exhibited by adult learners: auditory-visual and kinesthetic-tactual, accommodator-diverger-assimilator-converger, and

independent versus group social interaction. These models illustrate the aspects of learning style appropriate to this research.

First, Carbo, Dunn, and Dunn (1986) have conceptualized models which group learners by their primary way of perceiving or taking in information: auditorily, visually, and/or kinesthetically-tactually. Auditory learners understand more readily material they receive through hearing. They are able to remember nearly 75% of material they hear in a 45 minute lesson, while visual learners remember more of what they see and can retrieve details by concentrating on the things they have seen. Visually oriented students may recall pictures of words or images. Finally, according to Carbo, Dunn, and Dunn, kinesthetic-tactual learners "use their fingers and hands while concentrating; they remember more easily when they write, doodle, draw, or move their fingers" (p.14-15). Kinesthetic-tactual learners learn better by direct experience, movement, and manipulation of learning materials.

Second, Kolb (1976, 1984) identified four classifications of learners: divergers, assimilators, convergers, and accommodators. The styles of learning, however, represent individual preferences and ways of processing information based on two axes of criteria: active experimentation/reflective observation and concrete experience/abstract conceptualization. Active experimentation is learning through the experience of doing something; if an activity is not available, learners with this preference may create a way to be involved. Reflective observation is thinking about some task or idea in depth. Concrete experience is learning through one or more of the five senses: touch, taste, smell, sight, or sound. Abstract conceptualization is the ability to imagine ideas or other learning tasks without the need for concrete interaction with them.

Kolb's (1984) four types of learners can be described in the following ways. Divergers lean toward concrete experiences with emphasis on reflection and observation and tend to be imaginative and people-oriented. Assimilators base learning in abstraction backed up by reflection and observation; they are theoretical people and can effectively gather unrelated information into a whole. Convergers focus on abstract concepts but need active experimentation and like to know the exact answer to problems and like to work with things more than with people. Accommodators gather information by concrete experience and active experimentation; they are more apt to take risks than the other types, and they tend to be adaptive and assertive.

Additionally, Kolb (1984) explained learning as a cycle through which everyone moves. Although everyone has a clearly defined preference for a particular learning style, each person uses the four styles to some degree. The major difference is the point at which an individual starts the learning process. For example, a diverger begins learning with concrete experiences and then may move gradually toward abstract conceptualization. Kolb indicated that all learning is a process. Individuals vary as to which steps in the process they prefer.

Last, the work of Dunn, Dunn, and Price (1989) and the Center for Teaching Innovations Learning Styles Inventory (CITE) research (Babich, Burdine, Allbright & Randal, 1976) outlined the existence of a social aspect of learning styles. This dimension of learning style is characterized as social individual or social group. Social individual learners prefer to take in new information when they are alone. They process information better when given the opportunity to reflect on it before being asked to respond or write about it. Social group learners, on the other hand, need interaction with at least one other

person in order to process information effectively. They prefer to take in new information in a group and to discuss the material aloud. Discussion comes easier for social group learners and they need less reflection time before they feel comfortable answering questions.

### **Types of Learning Styles Assessments**

Each of the learning style models reviewed in this chapter has a specific type of instrument corresponding to it. These self-assessments may be scored by the taker or administrator and feature statements matching the various aspects of learning styles.

David Kolb (1976) designed an instrument that assesses where a learner falls within four dimensions of processing style. The test is self-scoring and involves twelve sets of four items which are responded to on a Likert scale according to the degree the descriptive terms are appropriate for the person taking the instrument. The scores for each characteristic are then tallied and graphed on a two-dimensional grid. Each quadrant represents one of the four learning styles. Quadrant I is the diverger, II is the assimilator, III is the converger, and IV is the accommodator. This instrument, although widely available and easy to score, does cost several dollars per student. Also, the Kolb LSI contains terminology that may be inappropriate for students with limited reading skills.

Among the other instruments are the Learning Style Inventory and the Productivity Environmental Preference Survey (PEPS) by Dunn, Dunn, and Price (1989) and the Center for Teaching Innovations Learning Styles Inventory (CITE) (Babich, Burdine, Allbright & Randal, 1976). These assessments lend themselves to both group and individual administration.

The PEPS was designed for and has been primarily used with children. It measures comfort preferences (lighting, temperature) and preferences for various methods of teaching, as well as interacting with others. It is a lengthy instrument with established validity. However, it must be purchased for use and must be sent in to the company for scoring.

Although it, too, was designed for school-age children, the CITE Learning Styles Instrument (LSI) lends itself extremely well to any age group. Recently, the CITE has been used by Kristofco (1990) in research with remedial adult students in a community college, with positive responses from students as to the instrument's "user-friendly" nature. Its easily read statements and self-assessment Likert scale allow learners to complete it quickly and accurately. Additionally, data gathered by the CITE researchers have established its internal item reliability and validity (Babich, Burdine, Allbright & Randal, 1976). The public domain status of the CITE instrument is also a very positive consideration for use with adults since budgetary constraints may be prevalent in the college for such use.

### **Importance of Learning Style Awareness for Learners**

Because many adults at the community college enter with educational deficits, they would benefit from enhanced learning styles awareness. Low self-esteem may result from these deficits, indicating the need for services, such as learning styles counseling and strategies (Claxton & Murrell, 1987). Additionally, students may carry the emotional burdens of past educational difficulties. At the community college level, these problems are often particularly challenging for the developmental studies students -- those individuals whose placement test scores fall below college level in two subjects (math, writing, and/or reading).

Also, developmental studies students may be at additional risk of having low grade point averages or other academic difficulties, so they need assistance how to use more effective learning strategies. According to recent research, the developmental studies "student may be deficient in basic skills in part because he/she does not 'fit' into the world of school" (Kristofco, 1990, p.217). However, knowing about learning styles can help adults feel more a part of and, consequently, more in control of school experiences, thereby creating more active and successful learners (Claxton & Murrell, 1987).

Learners who are familiar with their styles are better able to utilize learning resources and to take advantage of educational opportunities (Smith, 1982, p.78). For example, learners who are aware of their learning styles can plan, study, and set goals better. Knowledge of learning style can help learners understand the way they perceive and process information and what their instructional preferences are. Students can thus use learning styles awareness to choose instructors or curricula that fit their preferred learning styles. "The student, armed with greater knowledge about how he learns, is in a better position to structure his educational endeavors" (Claxton & Ralston, 1978, p.3). Beal and Pascarella (1982) found that intervention strategies, such as study skills training and style-appropriate learning methods, had a positive effect on retention.

"Self-concept [is] also linked to perception" (Morgan, 1997, p.109). Students use the same filters to assess their place in the world as they use to take in educational information. Therefore, learning style plays a role in the very development of self-esteem. People who are very analytical may see details that others may not intend; global learners may exhibit undue sensitivity to human emotions or lack thereof by others. This sort of error in perception can

cause serious damage to an individual's self image. Training in learning styles strategies can potentially help individuals improve their self image and how they react to other people, thus improving their ability to learn.

### **Research in Learning Styles-Based Studying by College Students**

Recent research has shown a relationship between study habits based on learning styles and success in college courses. Marsh (1992) conducted a study of developmental mathematics students at a community college, involving interviews, observations, assessments and questionnaires. The study used a survey assessment to measure students' perceptual modalities. Students were found to be more successful in the math courses when they utilized style appropriate learning strategies to study.

Another study looked at quantitative aspects of achievement. Clark-Thayer (1987) studied college students' attitudes, study habits, perceived learning style preferences, and achievement. The subjects were primarily white urban middle class students. Using two surveys, one which assessed students' preferences for classroom environment and conditions and another that assessed their study habits and attitudes, the research attempted to correlate study habits and achievement with learning environment preferences. It found that low but consistent relationships were present in the study sample, indicating that students who study in environments that match their style preferences tend to do better in college courses.

Finally, a study by Cook (1989) is important for community college students because it involved locus of control. This research looked at the relationships among academic success, learning styles awareness, and locus of control of community college students. This study determined that learning style awareness may have increased the students' feelings of control over learning

situations, thereby improving achievement retention rates of the community college students.

### **Classroom and Counseling Applications of Learning Styles**

Once learning styles have been assessed, instructors can teach to those styles (as much of the research suggests), simply let students fend for themselves (as is traditional in colleges), or provide learners with some choices that help them use their learning styles. To provide choices, instructors may give students a list of several activities that fit various learning styles so that students may have more control over learning methods. They may wish to use learning contracts with students to ensure that the choices students make are consistent with the educational objectives of the courses. "The teacher can assist [students] in developing contracts in which they identify activities they will engage in to accomplish those objectives" (Claxton & Ralston, 1978, p.4).

Learning contracts can also be used to outline learning strategies that are style-specific. For example, instructors or counselors may help students discover their learning styles by using one of the instruments mentioned earlier. Then, they may provide students with information about strategies like creating role plays for kinesthetic-tactual learners or flash cards for visual learners. Some auditory learners may benefit from recording lectures for future study or reciting study sessions aloud into a tape recorder for listening to over and over.

In many adult education settings, counseling also plays an important role. The person advising students may actually be a counselor or may be an instructor who guides students' choices. Counselors or instructional advisors can help adult learners discover their learning styles. When students are directly involved, diagnosing learning style is an easier process.

When diagnosing, [counselors should] (1) use, adapt, or devise one or more instruments; (2) ask questions and observe; (3) try to avoid jumping to conclusions or an overly simplistic diagnosis; (4) share tentative conclusions with the learner, making adjustments as they seem warranted; and (5) reflect on the implications for instruction, learning and the individual's better understanding of himself or herself as a learner. (Smith, 1982, p.78)

Following these guidelines, a counselor can make a strong impact on the learning process.

Finally, counselors may use learning styles awareness as a tool for retention. Retention may be associated with students' comfort level in the school situation. Comfort levels can be improved by increasing students' self awareness of their learning styles by giving them skills that improve confidence in their learning. Some learners are able to take the given learning styles information and proceed on their own toward success, while others require more from the counselors. This fact is especially true for developmental studies students since they frequently have a history of educational difficulties to overcome.

### **Chapter Summary**

Because learning styles reflect students' ways of taking in and processing information, it is important for students to be aware of them. Research in the past 10 years has shown that students with awareness of learning styles who also utilize appropriate study strategies are more confident about learning and better equipped to learn. This chapter reviewed a few learning style models that are appropriate for adult learners and the benefits that have been determined for students who gained learning styles knowledge and strategies. However, little of the research has been done with developmental studies community college students. Therefore, the research findings described in subsequent chapters

are meaningful and useful for such learners, as well as for instructors and counselors who work with these learners. In the next chapter, the research design and methodology for this study are detailed.

## CHAPTER III

### RESEARCH DESIGN AND METHODOLOGY

The purpose of this study was to examine how self-awareness of learning styles affects community college students' approaches to learning. This chapter describes the selection of participants for the research and the methods used in data collection and analysis. Because the attitudes and feelings of the participants were of primary interest, qualitative research was used, featuring inductive and exploratory interviewing. This research focused on the following questions:

1. To what degree were community college students aware of how they learn best?
2. To what extent did knowledge of learning styles impact students' feelings about their own learning abilities and their potential for success?
3. How did self-awareness of learning style affect how students approached learning situations and the learning process?
4. In what ways could students use their preferred learning styles to maximize their learning potential?
5. To what degree could students be taught to adapt to alternate learning styles?

#### **Qualitative Case Study Methodology**

Qualitative research allows the in-depth examination of a particular research question. It provides access to individuals' attitudes and self-awareness. According to Merriam, "qualitative inquiry is inductive - focusing on process, understanding, and interpretation" (1988, p.21). For this research,

the case study, or the in-depth data collection about events, places, groups, or individuals, was the method selected. Because an interpretive case study is descriptive, containing data describing the participants, and according to Merriam, is “used to develop conceptual categories or to illustrate, support, challenge” theories (p.27-28), it was useful for analyzing the effects of learning styles self-awareness on community college students. This research is based on the assumption that students who are aware of their own learning styles and who utilize effective learning strategies are more successful in their educational experiences. Interpretive case study allows this assumption to be supported or denied.

### **Data Collection and Analysis**

Because my objective was to explore students’ awareness of learning styles and their approaches to learning in general, inductive inquiry was appropriate. The conversational tone of inductive inquiry created a comfortable situation in which the participants could share their thoughts and feelings. The following section discusses the criteria used in selecting participants, methods of data collection (interview, learning styles assessment, and document review) and method of analysis.

### **Participant Selection**

Four purposefully selected community college students participated in this case study research. The adult participants were degree-seeking students who placed into developmental studies courses (for students with academic deficits as measured by college placement tests) and who had completed at least one quarter at a community college. These criteria allowed me to look at how awareness of learning styles affected this particular group of at-risk students.

The sample was purposefully selected because I wanted to see how well aware developmental studies students were of their own learning. The purposeful selection also ensured participants had developmental studies course experiences and were accessible to the interviewer. Additionally, the average community college student is an African-American woman, so the four women were selected to fit that profile.

When I began my research, I spoke with developmental studies instructors and received their recommendations of students who fit the criteria and would be willing to take part in the research. Four candidates, Brenda, Sharon, Tiffany and Charlene<sup>1</sup>, were invited and agreed to participate in the study. The four volunteers signed consent forms (Appendix A) which specified the methodology of the study including audiotaping of interviews. The women then were asked to participate in a learning styles assessment and strategies session and two individual interviews.

### **Data Collection**

Data were collected through document reviews, interviews, and learning styles assessments. The learning styles assessments immediately followed the first interviews, with strategies sessions about two days later. The second interviews were held in the subsequent semester.

**Document Review.** Document reviews were part of the research strategies. According to Merriam (1988), documents can be any records that are relevant and available such as transcripts, personal documents, or college applications. These types of data are useful and do not interfere with the research, nor are they changed by it. Specifically, data were collected through

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<sup>1</sup> These names are pseudonyms given to the participants in order to ensure confidentiality

review of high school and college transcripts, and college placement test scores. These data were valuable because they provided evidence of the students' progress before and during college and their goals as indicated by college majors.

**Interview.** Open-ended questions were asked to elicit accurate and thorough responses about the participants' learning habits and experiences and because conversational interviews are extremely good tools for getting to the heart of a person's feelings. Interview questions allowed the participants to share experiences and feelings about learning. A structured list of questions was used so that each interview maintained the same consistency, which according to Patton (1990) is important for increasing "the comprehensiveness of the data" (p.289). The interview guide (Appendix B) featured items addressing each of the research questions and insured that each participant was asked the same questions in the same order. Also, the guide allowed the interview to flow in a conversational manner that was comfortable for the participants and researcher (Patton, 1990). As needed, clarifying questions were asked to be certain I understood the responses and to elicit more in-depth answers. Adaptation was allowed as needed to ensure the students clearly understood the questions.

All interview sessions were tape-recorded and transcribed by me. Taping the interviews allowed me to focus on the responses and pay more attention to the participants, without the distraction of comprehensive note-taking throughout the sessions. Also, I could go back and listen to the tapes as I analyzed them so that I could review the inflection and emphasis used by the participants and the attitudes they revealed (Fraenkel & Wallen, 1993).

**Learning Styles Assessment.** The research also involved the administration of the Center for Innovative Teaching (CITE) Learning Styles Instrument (LSI) (Babich, Burdine, Allbright, & Randal, 1976) (Appendix C). The CITE instrument was selected because the reading level was low and appropriate for developmental studies students, though it did not appear juvenile, and it is a public domain document. After the initial interview, each respondent then was given the CITE Learning Styles Instrument to determine her dominant learning styles. After scoring and reviewing the assessments, I discussed learning styles and appropriate learning strategies with each participant. For example, if the student's LSI showed she was auditory and group oriented, I shared strategies such as setting up a study group in which the members discuss classwork aloud. Likewise, if the LSI showed a student was kinesthetic, I shared strategies such as using movement activities or role playing to learn literature.

### **Data Analysis**

I analyzed the data through the process of comparative analysis (Glaser & Strauss, 1967), a method of finding the similarities among cases. Specifically, comparative analysis was used to discover patterns among the students' attitudes toward learning, their awareness (or lack thereof) of their learning styles, and the study strategies they used in the developmental courses. I looked for similarities among the responses to the interview questions and the students' knowledge of themselves as learners before and after taking the learning styles assessments. Additionally, I looked at any issues they brought up that may also have helped or prevented success in college, such as family support and being unemployed.

## **Validity and Reliability in Case Study Research**

Validity and reliability are vital for research. Validity is the “degree with which correct inferences can be made from the results of a research study” (Bieger & Gerlach, 1996, p.77). Reliability refers to the consistency of results or the ability of research to be replicated. The two are interrelated in a qualitative study.

The validity of most qualitative research involves the internal value of the research itself more than the generalizations that may be drawn from it. This internal value derives from the descriptive nature of the data. The information shared about an individual person at a specific place in time and space is naturally valid in and of itself. Its function is to convey meaning about the individual situation. Qualitative data can also have transferability to other situations with similar criteria.

External validity, “the defensibility of [broad] inferences” (Fraenkel & Wallen, 1993, p.102) made from the data, is limited due to the nature of qualitative research. However, qualitative research, especially that which stems from purposefully selected participants, offers significant transferability. While large samples may be “stripped of their contexts when generalizations are made” (Patton, 1990, p.487), qualitative studies remain imbedded in their context, thus retaining their true nature and validity. Additionally, qualitative case studies may be applicable to other situations in which the conditions are similar to those of the participants.

The reliability of qualitative research comes from the consistency of interviewing and assessment, the integrity of the researcher, and the methods used in data collection. Qualitative research relies more on the reliability of the researcher since the researcher becomes the instrument when interviewing and

conducting case studies. “Just as a [quantitative] researcher refines instruments and uses statistical techniques to ensure reliability, so too the human instrument can become more reliable through training and practice” (Merriam, 1988, p.171).

Several methods may be used to ensure validity and reliability. These include triangulation, participatory modes of research, and attention to researcher biases. Data in this research were triangulated through the interviews, the CITE instrument, and document review (transcripts and placement test scores). Also, I was careful to ask the same series of questions with each participant, elaborating on them only when I perceived a participant struggling to understand a question. In the learning styles strategies sessions, I reminded students what they had shared with me about their learning styles in the first interviews and asked for their agreement regarding my understanding of their comments. I also consulted faculty members in a Developmental Studies Department who were helpful in providing clues to students' attitudes and approaches to learning. These kind of participant or member checks and peer consultations reinforced the validity of the data (Merriam, 1988). These methods provided accuracy in the research and thus established its validity and reliability. Because qualitative research is seeking “to describe and explain the world as those in the world interpret it” (Merriam, 1988, p.170), its validity and reliability are more internal in nature than those in quantitative studies, and therefore much more intertwined.

### **Assumptions and Limitations**

In most research of this type, the assumptions the researcher brings to the interviews can have positive and negative effects on the data. The positive effects stem from my experience as a counselor and my rapport with the

students in the study. Negative effects may be present due to my stake in the project or the expectations brought to the study.

First, since I work as a counselor at a community college, the research presented herein is very important to me. While my skills as a counselor could be viewed as creating a bias, I feel that they enhanced the study for several reasons. One, I used effective methods of communication which helped students to feel at ease; two, I have conducted numerous group and individual sessions designed to enhance students' study skills; three, for nearly five years, I have counseled students that fit the profiles of those in my research. I believe that I have an excellent understanding of students who are in need of academic support and who are first-generation college students. Not only have I worked with first-generation college students, but I am one myself. As a result, I have an underlying desire to help facilitate others in reaching their educational goals.

However, because of my vested interest in this research, I acknowledge that some researcher bias may have been present. Bias may be seen in the assumptions I made about students that participated in the study, including my beliefs and expectations about the learners. I believe all students can learn, but many must learn differently and may need longer study time to master the material. Community college developmental studies students face learning difficulties due to their past educational experiences and current struggles. With appropriate services like tutoring, study skills training, or learning styles workshops, though, community college developmental studies students can achieve more than they could alone.

Finally, there are certain limitations in the study that exist solely because of the nature of the students involved and the small sample selected. All the participants were African-American women from rural or semi-rural counties in

the southeast. Therefore, their experiences were similar and limited since none had attended college or worked outside of their native counties. Additionally, there were only four participants, which could suggest further study. The focused inquiry of a few purposefully selected individuals is useful in qualitative research, however, when the researcher wants to gain descriptive and more thorough information about the participants (Merriam, 1988). I believe there were advantages to having four participants since “in-depth information from a smaller number of people can be very valuable” (Patton, 1990, p.184). I was able to do more with each one in the way of interviews, taking adequate time with each one, without the need to rush. Also, I was concerned more with exploring the learning style knowledge of the participants, so, with only four in the study, I was able to go further with the assessment and strategies session for each one. Thus, although it had limitations, this research was important for the four students involved, and readers may consider the findings to be applicable to many other community college students.

### **Chapter Summary**

This qualitative study looked at developmental community college students' self-awareness of learning styles and how they approached learning situations. Data were collected through interviews, learning style assessments, and document reviews from four purposefully selected adult community college students who were enrolled in the developmental studies curriculum and had completed at least one quarter of study. The data gathered involved several aspects of the participants: historical data about participants' achievements, current grade status, attitudes about learning, learning styles, and self-awareness. Data were analyzed through the comparative analysis method.

This research afforded me a greater understanding of the learning styles, attitudes, and needs of developmental studies students. Additionally, it allowed me the opportunity to help four individuals better understand themselves and achieve to a greater degree. In the following chapters, I will discuss the findings of the research, the applications possible for community college students, and the conclusions I have drawn from this process.

## **CHAPTER IV**

### **RESEARCH FINDINGS**

The purpose of this research was to examine how self-awareness of learning styles affects community college students' approaches to learning. This chapter is organized into five main parts: (a) participant profiles, including descriptions of students; (b) initial research findings, featuring information about students' limited self-awareness, and use of learning strategies; (c) learning styles assessments and strategies, featuring students' LSI scores and my recommendations for them; (d) subsequent research findings, including increased awareness and self-esteem after LSI administration and strategies sessions; and (e) additional findings, including the importance of connectedness and educational background. This chapter ends with a brief summary.

#### **Participant Profiles**

The participants in this research were purposefully selected to ensure developmental studies course experiences and accessibility to the interviewer. I was somewhat familiar with the participants prior to the interviews through review of transcripts and other educational documents. Also, brief background questions asked before the structured interview gave insight into the participants' family and support network.

Similar attributes were found among the students interviewed. These similarities included that the four students were all adults at a suburban/rural community college in North Carolina. They were all African-American women and first-generation college students. The four women were first-generation college students, which had bearing on the research since these students were overcoming educational fears associated with their previous educational backgrounds. Since I cannot include the participants' wonderful faces, voices,

gestures, or inflection, I have written the following profiles to give additional insight into the feeling and character they shared with me. Pseudonyms have been used for confidentiality.

**Sharon**, 37 years old, is married and has two children. Her oldest child attends a state college. Sharon spoke highly of her family, stating that her husband and children were very supportive. Sharon spoke clearly and emphatically but seemed a bit apprehensive and distracted in the interview. That behavior may have been a result of her being so worried about her son who recently had broken his leg, a fact she shared in the session.

Educationally, Sharon had a slight advantage since she earned a high school diploma in the traditional number of years, but she had achieved only grades of "D" in mathematics and an overall average of "C" at graduation. Consequently, Sharon's college entry placement test results reflected her prior struggles and placed her in some developmental level courses.

After high school, Sharon began working in a factory. Because she desired a change of career, Sharon resigned from the job she had held for eight years so that she could attend college to pursue a nursing degree. At the time of the interview, she was working part time at a nursing home and attending college part time. Her most recent grade point average was below 2.0 due to her improper withdrawal from classes several years ago. She has earned 8 credit hours thus far.

**Charlene** is a 34 year old married mother of one. She said that her family is proud of her. She spoke emphatically about her ties to her religious beliefs as the basis for her life and the goals she chooses.

Charlene dropped out in the 11th grade and soon after completed the Adult High School Diploma program in 1982. With a current grade point

average of 1.91, Charlene is on academic warning at her college. Nonetheless, she has earned 17 credit hours thus far. Although Charlene is majoring in the Teacher Associate curriculum, she is currently taking courses in the developmental studies program.

Charlene entered the interview with a quiet approach and some hesitation. Although she had met me before, she was slightly intimidated by the idea of an interview. Once the interview had begun, Charlene seemed more at ease.

**Tiffany**, 29 years old, is married and has one young daughter. She grew up and lives in a rural southern town. She said she enjoys the atmosphere of the small town and has no plans to move. Tiffany's face lit up when she talked about her daughter and how proud the little girl is of her mother going back to school. Tiffany was relaxed and seemed happy throughout the interview.

Tiffany earned a traditional high school diploma in 1985. Her grades in high school were mostly "Cs." Tiffany's current college grade point average is 3.3, with 12 credit hours earned, indicating she had done quite well in the low level developmental classes and other introductory courses. She is currently taking developmental studies courses and will be pursuing a degree in microcomputer systems technology.

After working for nearly ten years at a food merchandising company, she is now in college because she was laid off. Currently, she is being sponsored by the Department of Labor for tuition and books, a federal program available to dislocated workers.

**Brenda**, 48 years old, is a widowed mother of three and grandmother of one. One daughter and one grandson live in the home with Brenda. Her home is in a rural southern town, in which she has lived all of her life. Brenda spoke

highly of the area in which she resides and of her family. She approached to the interview situation with a calm demeanor. Her speech was relaxed and candid. She seemed to enjoy talking about her plans.

Brenda's educational background included earning a GED from the same community college she now attends. Many years prior to that success, she had attempted a GED, but failed to earn it.

Recently, Brenda was laid off from her job in the food industry. Like Tiffany, she is sponsored in school by the Department of Labor dislocated worker program. Her major is microcomputer systems technology. She chose computers because she believes there to be less risk of getting laid off in a computer related field. Brenda is currently taking developmental studies courses. Her current grade point average is 3.3, with 12 credit hours earned, however she started in the lowest level courses.

### **Initial Findings**

After the first set of interviews, it was apparent that the participants were virtually unaware of themselves as learners. Also, even though other discussions came easily to them, they had a limited vocabulary to concretely express their learning styles and strategies. This section details the initial findings of the participants' self-awareness as learners and their limited ability to express thoughts about learning.

#### **Self-Awareness as Learners**

I found out that the students in my study had limited conscious awareness of how they learn and that they were uncomfortable with the topic at first. For example, Sharon could not answer the question about preferred type of instruction; she merely shared that math was her weakest subject and that she has done better in English. Even when prompted by the question, "What type of

teaching do you receive [in English?]," she was puzzled. She responded affirmatively only after a very leading question, "Does the teacher stand up and talk to you a lot or is it more of hands-on?" Her responses mimicked the leading question, which reinforced the fact that she did not know how she learns best.

Charlene was just as unaware of her own learning styles as Sharon was. Like Sharon, she needed prompting, and I had to offer leading questions. She knew that people learned differently, but could not describe her preferred styles. When prompted, she also repeated the prompted idea. She did seem to understand the idea of hands-on learning, saying "I can learn it hands, you know, hands-on." Charlene seemed to truly want to answer these questions and her facial expression said she was trying to do that.

Brenda and Tiffany seemed slightly more aware of themselves as learners in the first interview. Brenda responded to the questions about learning by saying that "[things have to be] explained to me in terms that I can understand." However, when I asked her to explain that statement further, Brenda struggled. Tiffany was able to describe some preferred learning strategies such as liking teachers to write things "mostly on the board" and to "stand up there and read ... and break it down to [me] so [I] can really grasp it." She also told me some strategies she uses in studying, but like the others she was unable to categorize her learning in particular styles.

### **Ability to Express Thoughts about Learning**

The women were all limited in their ability to express their learning strategies in words. Although they were quite articulate when discussing their families, jobs, and goals, the students were either unfamiliar with the language needed to express their learning styles or they had limited knowledge of them. For example, Charlene paused for several minutes after the question about how

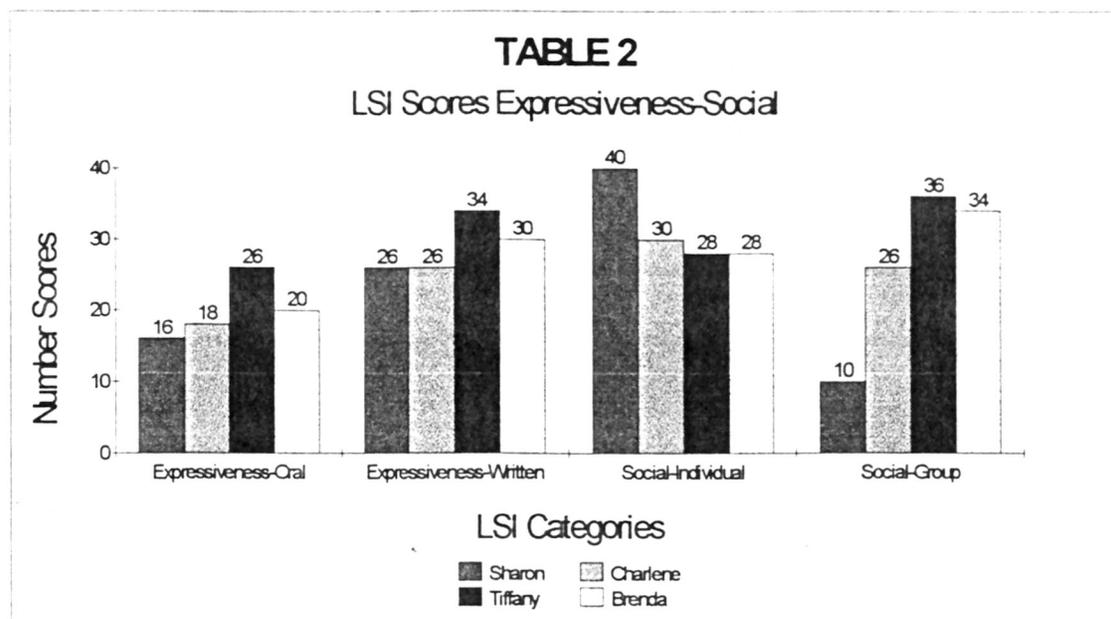
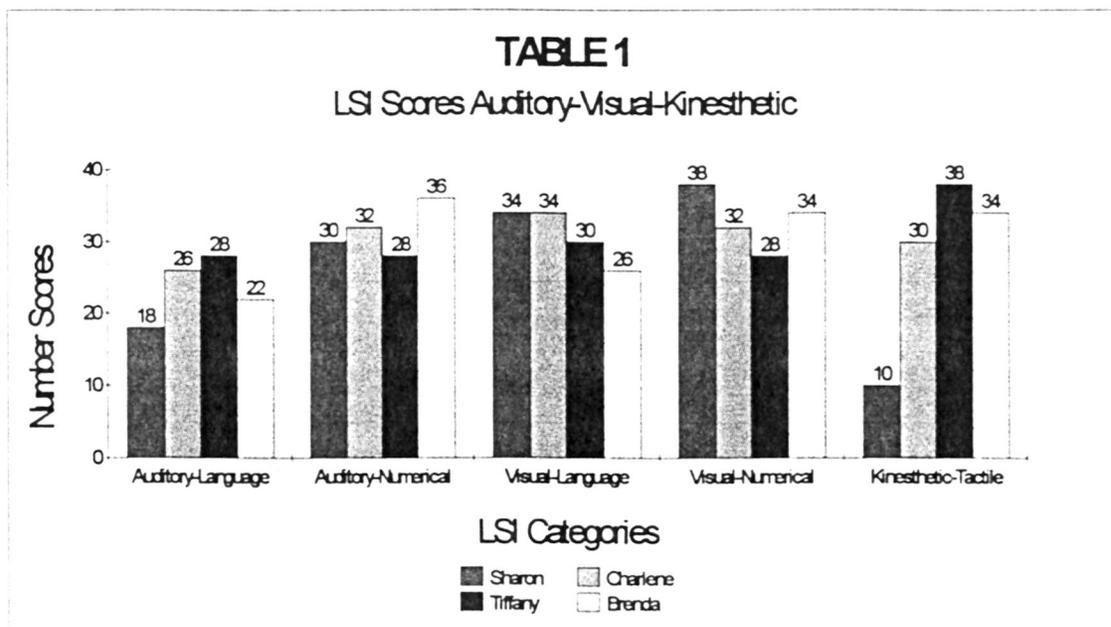
she learns best, so I felt I should restate the question and offer leading remarks. Then, when she responded, she repeated the leading items. This emphasized to me that she was unfamiliar with the terminology needed to answer the question. Additionally, when I asked Charlene to describe a positive learning experience, she replied, "You'll have to make some examples because I can't." Although she had an extensive vocabulary, she simply did not have the terminology needed to express her thoughts on that particular subject.

Like Charlene, Tiffany and Brenda struggled with the language. After being asked something, Brenda often whispered the questions audibly to herself. When asked how she learns best, Brenda replied, "for me it's got to be a teaching and then a lot of studying." She also stated that she likes to hear things explained "in a clear voice" and that she likes to do "a lot of reading." Although these phrases show an inkling of understanding, her terminology and means of expression were limited to concrete descriptions.

### **Learning Styles Assessment and Strategies Sessions**

Learning styles assessments using the CITE Learning Styles Instrument (LSI) (Appendix C) were conducted with each participant immediately after the first interview. The CITE LSI consists of 45 self-rated items which address nine learning styles areas -- visual or auditory language, visual or auditory numerical, individual or social group, oral or written expressiveness, and kinesthetic-tactile orientation. Responses are rated on a Likert scale of one to four, then tallied. Totals ranging from 33 to 40 show major or most preferred learning styles; scores in the range of 20 to 32 show minor or sometimes used styles; and scores ranging from 5 to 19 indicate negligible use or styles with which the respondent is uncomfortable.

The LSIs were scored and reviewed with participants in strategies sessions about two days following each administration. Table 1 shows the auditory, visual, and kinesthetic scores, while Table 2 shows the expressiveness and social orientation scores.



The learning styles sessions were not tape-recorded because I was sharing information with the students and their responses were minimal. However, the sessions involved the discussion of the LSI scores and strategies for each individual. Each participant was given a copy of her LSI scores (Appendices D-G) and recommended learning strategies (Appendices H-K). The strategies discussion consisted of evaluating the LSI and suggesting learning strategies and study skills for the preferred learning styles which emerged from the assessments. The following sections offer brief discussions of the participants' LSI scores (numerical scores in parentheses) and the appropriate strategies recommended to them.

**Sharon's** learning styles assessment showed that her major learning styles are social individual (40) and visual numerical (38) and language (34). This information means that she prefers visual information and that she prefers to learn new information alone. Her minor styles are auditory numerical (30) and expressiveness written (26). The auditory numerical score was nearly double the auditory language score (18), which may indicate she is as comfortable with numbers that she hears read aloud as she is with those she sees. Additionally, she strongly prefers writing to speaking since her expressiveness-oral score was in the negligible use range (16). All the other categories fell into the negligible use range.

My first recommendation to Sharon was that she try to convert as much of her study materials as she can to visual items. For example, I told her to make note cards for formulas, definitions, or other short items. She could even draw pictures or charts or use magazine cut outs to enhance her visualization of the material. Because her major was nursing and required considerable biology courses, I suggested that she watch the library's videotapes of anatomy and

physiology lectures and that she utilize the skeletons and other models available to her to enhance the visual style. Also, she should do the majority of her studying alone because she is primarily social individual oriented. Since she was slightly auditory numerical, I suggested that she listen first to the teacher working the math problem, then try to visualize the information she heard. Last, I suggested that she tape record her class lectures so that she could go back and take notes later and could relax and gain more from the class without the stress of taking down every word.

For reasons unknown to me, Sharon did not return to college for the next semester or for the second interview. Nonetheless, her presence and contributions from the first interview and strategies session were important for this research.

**Charlene's** LSI revealed only one major learning style -- visual language (34). However, she scored in the minor learning style range for nearly all the other areas. The highest scores in the minor styles were for visual numerical (32), auditory numerical (32), social-individual (30), and kinesthetic-tactile (30). Written expression, social-group, and auditory language also scored in the minor style range, each with scores of 26.

Charlene is visually oriented and somewhat auditory in mathematical situations, with additional strengths in kinesthetic-tactile activities and individual learning. Therefore, I discussed with her that she should try to visualize information, using creative imagery such as picturing the two trains traveling in a mathematics word problem. She needs to see words and needs to write out math problems in order to solve them. I suggested that she use a tape recorder in class so she would not have the stress of note taking. She could go back later and transcribe the taped lectures. Also, I told her that using a highlighting

pen to make her notes colorful would enhance the visual style. Similarly, note cards and other types of visual aides would benefit her. In addition, I recommended that she try to study first alone and to use hands-on activities, such as role playing or creating models, whenever possible to emphasize new skills or concepts. Finally, since her major was Teacher Associate, I explained that she would be able to utilize her preferred styles often in the hands-on and visual environment of the classroom.

**Tiffany's** major learning styles were kinesthetic-tactile (38), social-group (36), and expressiveness-written (34). Her minor styles included all the other categories, with scores mostly of 28. Because the scores were so close, Tiffany should be able to adapt and function well in any learning situation. I focused only on her major styles in the strategies discussion, however.

First, I suggested that she study together with a small group of classmates. This interaction will allow her to develop her abilities in expressing herself aloud and will provide for her need to process information outwardly. Additionally, since she is very kinesthetic, I challenged her to create hands-on learning situations whenever possible, perhaps by using role playing in group study sessions. Additionally, I told Tiffany that drawing or making models would tap into the kinesthetic style. I shared with her that written expression is a comfort zone for her. She should write notes whenever possible for later reference and perhaps should use a tape recorder to get class lectures for later transcription. Finally, since Tiffany's major was microcomputer systems technology, I explained that she would enjoy the hands-on learning of the computer lab and that she may want to work with a lab partner as permissible to capitalize on her social style.

**Brenda's** LSI showed four major learning styles. These were auditory (36) and visual (34) numerical, social-group (34), and kinesthetic-tactile (34). All the other styles showed as minor areas for Brenda. Like Tiffany, Brenda may function well in any learning situation. However, many of her minor style scores were at the low end of the range (20 to 26), indicating she may need guidance in developing her minor styles for adequate use.

Because Brenda was group oriented, my first suggestion for her was that she study with at least one other person. The interaction with a study partner would be valuable for her. She also was very kinesthetic, so she needed to develop hands-on activities to enhance her learning. We discussed the use of role-plays and model-making to add hands-on learning. Brenda scored high in both auditory and visual numerical, which meant she was more comfortable with math than with language. I told her that she should focus on both visual and auditory information by using flash cards and by talking aloud while studying. These techniques could also improve her comfort level with language information. Also, within the minor styles, she scored ten points higher for expressiveness-written than she did for expressiveness-oral, which meant she was more at ease writing than she was with speaking. Because of her comfort with writing, we discussed her keeping notes while studying to record things she may need to ask a classmate or the teacher, so she would have a reference point when talking to them later. Finally, like Tiffany, Brenda's major was microcomputer systems technology, and since their styles were similar, I explained to Brenda that she would benefit from the hands-on learning of the computer lab and that she may like to work with a classmate to add to the cooperative learning experience.

## **Subsequent Research Findings**

The second interviews illustrated that the LSIs and strategies sessions were a successful means of helping the participants. The findings suggest the students had an increased self-knowledge about learning, that the learning styles strategies sessions had been helpful, and that students had increased self-confidence.

### **Increased Self-Awareness about Learning**

The data indicated that participants gained more self-knowledge after the learning styles assessment and strategies sessions. They were more confident and at ease when discussing learning styles. I asked them specific questions about their feelings, their styles, and school. Charlene said of herself, "I found out a lot about myself.... I'm ready to get back into the feel of learning." Brenda indicated a slightly more focused perspective by saying, "I do more studying now, which I probably didn't do or either I didn't know how to do it." Brenda also stated, "I recommend that [anyone having problems] talk to a counselor ... that can help them and give them some advice as to how to go about studying [using learning styles]." Tiffany indicated that the changes she has made have helped her. She was able to articulate the ways she learns more clearly than in the first interview. She said that because she knows more about herself, "I don't mind coming now ... [the schoolwork] is harder, but it's a lot better."

### **Improved Learning Strategies**

Participants were able to improve learning processes after learning style strategies were recommended. In the second interviews, I reminded the participants of their style strategies so that they would be more comfortable discussing their use of the strategies and any changes they had made since the first interviews.

Charlene was able to implement the style strategies I had recommended to her. Since she was primarily visually oriented, she was able to use flash cards and highlighters to emphasize important information. Tiffany also indicated that the learning strategies “helped my grades ... [and] helped me to concentrate better.... So the techniques have helped me.” Additionally, Tiffany has increased her use of auditory language, a minor learning style for her, by reading aloud with her daughter and to herself. Brenda, too, stated that she had put the recommended strategies to use and that they have helped her. Since she had learned that she was very auditory and visually oriented, Brenda had begun to increase the amount of reading aloud that she was doing and to take more notes while studying.

### **Increased Self-Esteem**

Participants expressed more confidence and self-esteem after taking learning styles assessments. Their voices were full of positive energy. Each of them had something good to say about the way the LSIs and strategies sessions had helped them.

Charlene indicated that she feels more confident and has “a high self-esteem.” She indicated that she told herself, “I feel like I’m ready, you know, I’m going to achieve more than I did.” A benefit of increased self-esteem is improved active learning, which is defined as the student seeking out learning situations and participating fully in the learning process. This benefit was best illustrated by Charlene who stated that she was more likely now to “stay right up there [with the teacher] and bug her” to get her questions answered. That statement indicated an increased confidence and ability to get actively involved in the process of learning.

Brenda said, "At this point I say I have fully improved over last semester.... I've really done an improvement." In addition Brenda said, "This semester I feel so good about my classes, and they are going so much better than they did last semester, and I don't feel like I'll drop out right now (giggles) like I [felt] last semester." Throughout the interview, her confidence was high and her attitude was very positive.

### **Additional Findings**

In addition to the previously discussed findings, other important findings emerged from the data analysis. Although not specifically sought at the beginning of the research, these findings are meaningful and should inspire further research focusing on these items. These findings include that connectedness is important for students and that educational experiences play a role in students' success. These findings were generated from the questions regarding positive and negative learning experiences, which I had asked in order to bring out the students' learning strategies, instructional preferences, and approach to the learning process.

### **Role of Support and Connectedness**

First, the study showed that supportive people were vital to the educational success for the participants. This support was noted by each of the participants in the interviews. Supportive family, friends, and teachers were important.

In the first interviews, each of the four women indicated that the support of family and friends was important, and the participants emphasized these issues. Sharon, Charlene and Tiffany said that their husbands and children were very supportive. Charlene said her "husband helps [her] a lot." Sharon indicated that her husband was supportive so she could quit working and go to school full-time.

Tiffany shared that her husband and daughter are very proud of her. Brenda, a widow, indicated that her children, especially her daughter, were supportive.

Teachers who offered concern as well as instruction were of importance. Several of them also stated that a teacher who showed concern was a good teacher. Sharon shared a positive learning experience in which her high school math teacher expressed interest in her. "Her pulling me to the side to talk to me let me know that she was interested in me and my work ... so I settled down and turned my Cs and Ds into Bs." Charlene emphasized that "you can tell this is a good teacher by the way, you know, the way she ... has a real genuine concern for the students."

Like Sharon, Charlene and Tiffany cited teachers as reasons for a positive learning experience. Charlene spoke of her English teacher, saying "she really made a positive effect on me. She's a real -- she's a real, genuine, warm-to-heart.... She really cares for the students." Tiffany also shared such a sentiment. Her teacher helped her even with something unrelated to school -- when she needed to write a letter to decline jury duty because of religious beliefs.

I went to one of my teachers to help me write a letter stating that my religion was against [jury duty] ... and she sat me down and ... helped me to like finish the letter up, and that helped me a lot because they wrote me back stating that I didn't have to appear ... and she told me if I have any more problems or whatever that I can always come to her, and I felt secure to go and talk to her about different things.

Further, when asked about negative learning experiences, the majority answer was *lack of support*. Tiffany indicated that her math teacher seemed never to have enough time for the students. She also said the teacher forced students to go to the chalkboard to work problems. "So, I have to stand up here

with this piece of chalk in my hand at the board trying to figure out what I should write down.” Tiffany related an instance when she asked her teacher for help. She told me that the teacher replied, “Well, if you don’t know it, you find someone in here to help you, you know because you have to learn it.” This example indicated the implications of not having a supportive teacher. Brenda’s negative learning experience echoed a similar experience. She had attempted her GED right after dropping out of high school, but the format for GED courses was very independent, with little or no teacher input. The experience was distressing for Brenda, who was used to high school where the teachers were involved; she “just couldn’t do it on my own.” Brenda did not complete her GED until years later.

### **Role of Educational Experience**

Educational experiences color the future reactions and learning processes of students. For example, students who have come through the high school system in which they have been passive learners will be less comfortable and less successful in subsequent classes that require independent and self-directed learning. This point is illustrated by a few poignant statements from the two sets of interviews.

In the initial interview, Tiffany indicated that she liked it in high school when the teachers would show you “how you should do this or how you should do that.” Tiffany seemed to desire that her college teachers provide more direction like her high school teachers did. Although rare, some college teachers have provided this direction; Tiffany’s business instructor “writes notes on the board so you can copy them down and read over them at night, and that way you can think on them better.” Tiffany had struggled in the previous semester when she “had to think up my own notes to write.” This point shows

that Tiffany needed the direction and input of the teacher and that she had difficulty getting the necessary information on her own as a result of being a passive learner throughout high school.

Like Tiffany, Brenda had been accustomed to high school teachers who gave her the necessary information. When she had to quit high school and tried for her GED, Brenda failed because she needed a teacher to guide her. The GED class was self-directed and Brenda did not have the educational experiences or skills needed to study and learn on her own. Years later, when she finally achieved her GED, Brenda attributed it to the fact that she had realized that she had to do it herself. "I knew what I had to do. I knew I had to do all the work on my own, so I just applied myself more." Because she had learned that no one was going to help her in getting the GED, Brenda gained awareness of her abilities in this successful attempt at earning her GED.

### **Chapter Summary**

This chapter detailed the interviews and assessments used in this research. Participant profiles, interview data, learning styles, and learning strategies were included. This research resulted in several findings; some were related to my original research questions, and some were additional findings. First, students were initially unaware of themselves as learners and unable to fully express their thoughts about learning. Second, learning styles awareness improved their self-awareness, enhanced their use of appropriate learning strategies, and increased their self-esteem. Third, students needed a support system consisting of family, friends, and educators. Last, students' educational backgrounds play a role in their future attitudes and successes in learning situations.

In the final chapter, I will discuss my conclusions about this research and my recommendations and ideas for further research.

## CHAPTER V

### DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

This research looked at the effects of self-awareness of learning styles on how community college students approach learning situations. The participants for this research were four purposefully selected community college developmental studies students, and they were all African-American women from small southern towns. The research consisted of initial interviews, learning styles assessments using the Center for Innovative Teaching Experiences (CITE) Learning Styles Instrument (LSI) (1976), learning styles strategies sessions, and follow up interviews.

The research focused on the following questions concerning learning styles and community college developmental studies students.

1. To what degree were community college students aware of how they learn best?
2. To what extent did knowledge of learning styles impact students' feelings about their own learning abilities and their potential for success?
3. How did self-awareness of learning style affect how students approached learning situations and the learning process?
4. In what ways could students use their preferred learning styles to maximize their learning potential?
5. To what degree could students be taught to adapt to alternate learning styles?

This chapter includes a discussion of these questions, as well as conclusions and recommendations for future research.

### **Discussion of Findings**

According to Smith (1982), learners who are familiar with their own learning styles are better able to use learning resources and benefit from educational opportunities. My first research question dealt with community college students' awareness of learning styles. I found that the four participants were unaware of their own styles. Furthermore, the students could not fully articulate their ways of learning and approaches to education. They were also limited in their ability to express their learning strategies. They were, however, very expressive about the other aspects of their lives, including work and family. They could tell me their favorite subjects, and when prompted, would agree that they used certain study methods. However, they were unable to respond on their own to the questions about learning.

My second research question dealt with students' feelings about their learning abilities and their potential for success. This research indicated that students' feelings about themselves as learners improved with self-awareness of learning styles. As a result of increased learning styles awareness, students' self-esteem grew, and their self-concept improved. In a similar study, Morgan (1997) found that learning styles can help students increase self-awareness and thus improve their self-esteem and self-concept. Smith (1982) also reported that students who are more aware of their learning styles are better able to set attainable goals; goal attainment is also a factor in good self-concept. Similarly, Kristofco (1990) found that students in developmental studies courses may be unsuccessful because their ways of learning do not work in traditional college classes. Therefore, learning styles awareness can help the students to become better learners and thus more successful and self-confident.

Students' approach to the learning process after learning styles awareness and strategies sessions was the focus of the third research question. The change was noteworthy. Because of their increased self-confidence following the learning styles strategies sessions, the students in this study were ready to use active learning. Active learning allows students to feel in control of their own learning and to potentially get more from each learning experience. In concurrence with this research, a study by Cook (1989) found that students feel in control of their own learning when they know their learning styles. Additionally, Clark-Thayer (1987) found that students who use style-specific learning strategies while studying tend to do better in college courses.

Question four looked at the ways participants could use appropriate learning strategies to increase their potential for learning. The students were more likely to use appropriate learning strategies after the learning styles sessions. That finding indicated that they simply needed to be shown what study methods might work best for them. Similarly, in a study by Marsh (1992), students who were shown style-appropriate study methods were more successful.

Because the students in this research were so unaware of their own styles and because they needed guidance even to use their preferred styles, time did not permit looking into question five (adapting to alternate learning styles). However, the initial learning styles information gleaned from the CITE LSI results allowed adequate strategies recommendations that helped the students in the immediate semesters.

There were, however, several unexpected, but beneficial findings which showed that the participants needed supportive people in their lives to fully benefit from educational situations and that their educational backgrounds

played a significant role in their success. Not only did they tell of their supportive families, but they cited supportive teachers as part of their positive learning experiences. This finding is a meaningful part of the research because the students said so much in the interviews regarding the importance of supportive instructors to help them learn. Chapman (1989) indicated that freshmen students, especially women, greatly benefit from networking and mentoring programs, indicating a need or desire for a support group. Chapman's research further suggested that women flourish in environments that value and cultivate interpersonal relationships. Like Chapman's research, this research is important for women students and for developmental studies students who may face many of the situations traditionally faced by women: unemployed, low-income, first time college students.

Although these additional findings were not an original part of the study, these findings affirmed assumptions I previously had about adults in the developmental studies program. The findings corroborated the belief that these students require more connectedness and more customized learning situations. Finally, the findings confirmed that developmental studies students would benefit from learning styles knowledge and learning skills.

### **Conclusions and Implications**

This research yielded several key points of interest for theory and practice. Instructors and counselors who work with community college students, as well as the students themselves, can benefit from this research. Benefits lie in the improvement of the educational process for many adults in the United States. The following section communicates these important points.

The research's importance for educational theory is in its addressing of developmental studies students' lack of educational preparedness. These

students arrive in the community colleges under-prepared to learn, and yet they are among those most in need of good education. Adult learning theory states that people become more self-directed as they mature (Knowles, 1975).

Knowles believed that all adults need to be self-directed and that they thrive in such environments. This belief is viable for many adults, but those who are least educationally prepared need a teacher to guide them (Grow, 1991) and are lost in courses which offer little teacher direction or require considerable independent work outside of class.

Because awareness of learning styles and utilization of adequate learning strategies are factors of the learners' situations (Pratt, 1988), students can become more self-directed by knowing and using them. Therefore, it is vital that instructors know about learning styles research and teach these students skills in *learning how to learn* (Smith, 1990). Additionally, according to Gibbons (1990), learning can be divided into three basic kinds: Natural, formal, and personal. "Natural learning can occur at any time throughout life and whether we want it or not, accidentally and spontaneously" (p. 71). Some of this learning comes from the environment, interaction with others, and practice. It cannot be controlled. Formal learning from an instructor is more familiar to students, and it "dominates any other form of learning in our minds and seems to be the only legitimate method of education" (p. 77). Students use formal skills, like questioning and listening, but may need study skills, like finding meanings and generalizing, to get the most from formal learning. Also, when the instruction is mismatched to the individuals' learning styles, learning becomes difficult. Personal learning, using "self-directed, intentional learning activities" (p. 78), is needed to fill in the gaps. Due to a lack of adequate childhood preparation for learning, many students must be taught the skills, such as organizing and taking

action, to achieve personal learning. Workshops and counseling sessions could enhance learning skills and help students toward educational success.

Additional relationships between this research and adult learning theory are found by looking at Maslow's (1970) hierarchy of needs. For most people, the physiological, safety and security, love and belonging needs are met before they come to school. However, if these needs are not met, adults' ability to learn can be affected. For some people, the next level of Maslow's hierarchy, love and belonging, is limited once they enter the classroom. Thus, these students feel out of place, awkward, or unaccepted by teachers or classmates. As this research has shown, adult students need to feel connected to their peers and teachers. Instructors can help with this connectedness by offering kind words and treating adult learners with more respect and genuine concern than may be common to the classroom atmosphere. Following Maslow's hierarchy, once the first three levels of need are met, the adults may gain self-esteem and may become more ready to learn. Learning styles awareness has been shown in this study to increase self-esteem, therefore leaving students in the optimum position for effective learning.

The relationship between this research and educational practice may be best illustrated by the following example. In my job as a counselor, I work with over 250 community college students similar to the individuals in this study. I have been able to modify my counseling techniques based on this research. Because of the additional findings that indicated students need a support person, I hold more frequent counseling sessions with my students in the developmental studies program so they can confide in someone and can feel connected to someone in education. Furthermore, I use learning styles assessments, specifically the CITE LSI, to evaluate students' learning

preferences. I also prescribe appropriate learning strategies and teach workshops on *learning how to learn* skills to facilitate students' success. I have found that additional counseling, learning styles assessments, and study strategies sessions help my students to grow and succeed in college. Based on this research, I will continue to evolve these practices for the benefit of my students. •

Learning styles are part of the spectrum of ways that individuals can learn about themselves and their needs as learners. These implications are important for this research and subsequent research since developmental studies students would benefit from positive educational experiences and improved self-esteem.

### **Recommendations for Future Research and Practice**

Having completed this research, I have noted several points to enhance future research of this nature and educational practice with adults. First, knowing that developmental students are virtually unaware of how they learn, considerable time should be spent on the learning styles assessments and strategies sessions. The time frame of this study did not allow for meeting with the participants more than twice in two semesters, but perhaps three or four strategies sessions with developmental studies students over a year's time would give them more time to understand and use the recommended learning strategies. Second, because the students in this study were unable to articulate their concepts and approaches to learning, more specific learning styles questions should be used (i.e. Do you prefer to listen to a lecture or to watch a video?). Also, working on communication skills through workshops and other activities would be beneficial for students. These activities may include discussion sessions and writing projects through which the students could practice expressing their ideas. Third, because students in the developmental

studies program have limited awareness of learning and inadequate use of appropriate learning strategies, they need to be taught how to learn to maximize their educational potential. Each of these recommendations would enhance future study and provide added benefits to participants.

In my practice with developmental studies students, I have seen the Myers-Briggs Type Indicator (MBTI) (Myers, 1972) help students gain a greater understanding of themselves. A future study may use a personality inventory, such as the MBTI, in addition to the CITE LSI to provide insight into learning and processing styles that would relate to and add deeper insight to the CITE findings and could help with teaching students *learning how to learn* skills. Such research could discover how well students respond to such assessments and learning strategies. Regardless of the type of future study, developmental students can and should be taught how to learn better so that they can be more successful in college.

The students in this research needed to feel connected and supported. This phenomenon was explored by Naretto (1995) who explained that adult university students who had supportive communities (college and familial) had higher retention and graduation rates. Also, students who persisted in college indicated that their friends, teachers, and families were encouraging to them about their educational endeavors. Naretto noted that adult students who did not graduate felt support from their familial communities but felt the college environment was not encouraging, illustrating that support groups and positive instructors would have helped students persist.

### **Summary**

This research looked at the effects of self-awareness of learning styles on how community college students approach the learning process. This qualitative

case study research began with a review of existing literature and a plan for effective methodology. The study featured four community college developmental studies students, and it involved document reviews, interviews, and learning styles assessments.

Community college students enter with a variety of educational levels and backgrounds. Developmental studies students may have the most educational challenges to overcome. Therefore, they may also have the greatest potential to benefit from a learning styles assessment and strategies program which can help them increase educational success. Self-awareness of learning styles and the style-specific strategies that can enhance active learning are very important to developmental studies students. This improvement in learning processes also increases students' self-esteem by giving them better skills and more positive attitudes towards themselves as learners. Students who are more comfortable with learning can more easily take advantage of educational opportunities.

There are many theories and assessments for learning styles. This research focused on the Center for Innovative Teaching Experiences' (CITE) (Babich, Burdine, Allbright & Randal, 1976) model of learning styles. This research was designed as a qualitative study since the primary goal was to explore students' approaches to learning and their awareness of themselves as learners. The participants were purposefully selected to ensure developmental studies course placement, one or more semester's college experience, and accessibility to the researcher. Four African-American women who were first-generation college students participated in the study. Document reviews, looking at high school and college transcripts available to the researcher, were done prior to the first interviews so that the researcher could develop an understanding of the students' educational histories. Two individual

tape-recorded interviews were conducted using an interview guide to ensure consistency of questioning. The research also involved learning styles assessments using the CITE LSI. The assessments were done immediately following the first interview with each participant. Then, the instruments were scored, and learning styles recommendations were made.

The research findings were important. First, the participants had little self-awareness as learners. They were unaware of the best ways for them to learn, but they could describe some ways in which they study. Also, the students were unable to fully articulate their thoughts about themselves as learners or about their learning styles. Leading questions had to be used due to the participants' lack of the necessary vocabulary and knowledge. Nonetheless, the learning styles assessments and strategies sessions were helpful to the students. In the second interviews, each of the participants expressed improvements in their level of self-awareness, use of learning strategies, and self-esteem. Additional findings included their need for support and connectedness in educational settings and the importance of educational background. The participants noted teachers who were supportive as part of positive learning experiences for them. Additionally, each of the students indicated that their families were supportive and encouraging of them returning to college.

This study confirmed that developmental studies students are in need of learning styles assessments and strategies as well as *learning how to learn* skills and supportive people. Although the participants in this research were all community college women, the findings herein are important and applicable to other students. Future research may add to these findings and increase

students' awareness and understanding of themselves as well as improve their educational success rates.

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APPENDIX A  
CASE STUDY CONSENT FORM

## CASE STUDY CONSENT FORM

## STUDENT RESEARCHER

NAME: Robin Owens Proctor PHONE: (919) 443-4826ADDRESS: 140 N. Berryhill Road, Rocky Mount, NC 27804

THESIS RESEARCH TITLE: Effects of Community College Students' Self-Awareness of Their Learning Styles Upon Their Approach to the Learning Process

## RESPONDENT:

I, \_\_\_\_\_, voluntarily give my permission to the above named student researcher to engage in case study interviews and learning styles assessment involving me and to use the data obtained in this research (including quotations by me) in a thesis submitted to the East Carolina University Graduate School as part of the requirements for a Masters of Arts in Adult Education Degree. I further agree that the student researcher may use the thesis in professional presentations or publications as well as in continuing or doctoral level research.

I understand that my participation in this research will begin in June, 1996 and may continue through November, 1996. I realize that there will be no costs or monetary rewards for my participation and that there are no foreseen risks for me. I know that I am volunteering and can stop participating at any time without penalty.

I specifically authorize the student researcher to obtain data by means of the following case study research activities:

- Observations
- Individual Interviews
- Audiotape recording
- Learning Styles Assessment
- Review of my Academic Records

I understand that my confidentiality will be protected and that the student researcher will use pseudonyms for me and people and organizations I might mention. Audiotapes will be confidentially secured by the student researcher and will be available only to the student researcher and her thesis committee.

---

 Signature of Respondent

Date

---

 Signature of Student Researcher

Date

Persons to Contact if needed: Robin Proctor (919)443-4826 OR Dr. Vivian Mott at ECU (919)328-6177

A copy of this signed form has been provided to the respondent.

APPENDIX B  
INTERVIEW GUIDE

## INTERVIEW GUIDE

### PRELIMINARY INTERVIEW

1. How do you think you learn best?
2. Describe a positive learning experience.
3. How did that experience affect your attitude toward learning?
4. Describe a negative learning experience.
5. How did that experience affect your attitude toward learning?
6. To what degree do you think these experiences you described have affected your overall achievement in school?

## INTERVIEW GUIDE

### FOLLOW-UP INTERVIEW

1. How have you changed your approach to learning since we discussed your learning style(s)?
2. In what ways has your learning style profile affected your ability to learn?
3. Knowing your preferred learning style(s), to what extent have you been able to use it(them) more effectively?
4. Now that you are aware of other learning styles, how have you been able to use them?

APPENDIX C  
CITE LEARNING STYLES INSTRUMENT

### III. Learning Styles Instrument

The C.I.T.E. Learning Styles Instrument can assist classroom instructors and support personnel in determining a student's preferred learning style.

The instrument is divided into 3 main areas:

- information gathering
- work conditions
- expressive preference

Information gathering includes auditory language, visual language, auditory numerical, visual numerical, and auditory-visual-kinesthetic. Work conditions focus on whether a student works better alone or in a group. Expressiveness preference considers whether a student is more effective with oral or written communication.

Knowing information about learning styles can be useful when determining which assessment instruments are appropriate to use. It is also useful when developing an individual education plan in determining what classroom modifications will be necessary.

From the Center for Innovative Teaching Experiences  
C.I.T.E. Learning Styles Instrument

Babich, A.M., Burdine, P. Allbright, L., Randal, Pl.  
Wichita Public Schools  
Murdock Teacher Center

		Most Like Me		Least Like Me
1.	When I make things for my studies, I remember what I have learned better.	4	3	2 1
2.	Written assignments are easy for me to do.	4	3	2 1
3.	I learn better if someone reads a book to me than if I read silently to myself.	4	3	2 1
4.	I learn best when I study alone.	4	3	2 1
5.	Having assignment directions written on the board makes them easier to understand.	4	3	2 1
6.	It's harder for me to do a written assignment than an oral one.	4	3	2 1
7.	When I do math problems in my head, I say the numbers to myself.	4	3	2 1
8.	If I need help in the subject, I will ask a classmate for help.	4	3	2 1
9.	I understand a math problem that is written down better than one I hear.	4	3	2 1
10.	I don't mind doing written assignments.	4	3	2 1
11.	I remember things I hear better than I read.	4	3	2 1
12.	I remember more of what I learn if I learn it when I am alone.	4	3	2 1
13.	I would rather read a story than listen to it read.	4	3	2 1

14.	I feel like I talk smarter than I write.	4	3	2	1
15.	If someone tells me three numbers to add I can usually get the right answer without writing them down.	4	3	2	1
16.	I like to work in a group because I learn from the others in my group.	4	3	2	1
17.	Written math problems are easier for me to do than oral ones.	4	3	2	1
18.	Writing a spelling word several times helps me remember it better.	4	3	2	1
19.	I find it easier to remember what I heard than what I have read.	4	3	2	1
20.	It is more fun to learn with classmates at first, but it is hard to study with them.	4	3	2	1
21.	I like written directions better than spoken ones.	4	3	2	1
22.	If homework were oral, I would do it all.	4	3	2	1
23.	When I hear a phone number, I can remember it without writing it down.	4	3	2	1
24.	I get more work done when I work with someone.	4	3	2	1
25.	Seeing a number makes more sense to me than hearing a number.	4	3	2	1
26.	I like to do things like simple repairs or crafts with my hands.	4	3	2	1
27.	The things I write on paper sound better than when I say them.	4	3	2	1

28.	I study best when no one is around to talk or listen to.	4	3	2	1
29.	I would rather read things in a book than have the teacher tell me about them.	4	3	2	1
30.	Speaking is a better way than writing if you want someone to understand what you really mean.	4	3	2	1
31.	When I have written math problem to do, I say it to myself to understand it better.	4	3	2	1
32.	I can learn more about a subject if I am with a small group of students.	4	3	2	1
33.	Seeing the price of something written down is easier for me to understand than having someone tell me the price.	4	3	2	1
34.	I like to make things with my hands.	4	3	2	1
35.	I like tests that call for sentence completion or written answers.	4	3	2	1
36.	I understand more from a class discussion than from reading about a subject.	4	3	2	1
37.	I remember the spelling of a word better if I see it written down than if someone spells it out loud.	4	3	2	1
38.	Spelling and grammar rules make it hard for me to say what I want to in writing.	4	3	2	1
39.	It makes it easier when I say the numbers of a problem to myself as I work it out.	4	3	2	1
40.	I like to study with other people.	4	3	2	1

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41.	When teachers say a number I really don't understand it until I see it written down.	4	3	2	1
42.	I understand what I have learned better when I am involved in making something for the subject.	4	3	2	1
43.	Sometimes I say dumb things, but writing gives me time to correct myself.	4	3	2	1
44.	I do well on tests if they are about things I hear in class.	4	3	2	1
45.	I can't think as well when I work with someone else as when I work alone.	4	3	2	1

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C.I.T.E. Learning Styles Instrument  
Score Sheet

Visual Language	Social-Individual	Auditory-Numerical
5 - _____	4 - _____	7 - _____
13 - _____	12 - _____	15 - _____
21 - _____	20 - _____	23 - _____
29 - _____	28 - _____	31 - _____
37 - _____	45 - _____	39 - _____
Total ____ x2 = ____ (Score)		

Visual Numerical	Social-Group	Kinesthetic-Tactile
9 - _____	8 - _____	1 - _____
17 - _____	16 - _____	18 - _____
25 - _____	24 - _____	26 - _____
33 - _____	32 - _____	34 - _____
41 - _____	40 - _____	42 - _____
Total ____ x2 = ____ (Score)		

Auditory Language	Expressiveness Oral	Expressiveness-Written
3 - _____	6 - _____	2 - _____
11 - _____	14 - _____	10 - _____
19 - _____	22 - _____	27 - _____
36 - _____	30 - _____	35 - _____
44 - _____	38 - _____	43 - _____
Total ____ x2 = ____ (Score)		

Score: 33 - 40 = Major Learning Style

20 - 32 = Minor Learning Style

5 - 19 = Negligible Use

APPENDIX D  
SHARON'S LSI SCORES

Sharon

C.I.T.E. Learning Styles Instrument  
Score Sheet

Visual Language

5 - 3

13 - 4

21 - 3

29 - 3

37 - 4

Social-Individual

4 - 4

12 - 4

20 - 4

28 - 4

45 - 4

Auditory Numerical

7 - 4

15 - 2

23 - 2

31 - 3

39 - 4

Total 17 x2 = 34 (Score)

Total 20 x2 = 40 (Score)

Total 15 x2 = 30 (Score)

Visual Numerical

9 - 4

17 - 4

25 - 4

33 - 4

41 - 3

Social-Group

8 - 1

16 - 1

24 - 1

32 - 1

40 - 1

Kinesthetic-Tactile

1 - 1

18 - 1

26 - 1

34 - 1

42 - 1

Total 19 x2 = 38 (Score)

Total 5 x2 = 10 (Score)

Total 5 x2 = 10 (Score)

Auditory Language

3 - 1

11 - 3

19 - 3

36 - 1

44 - 1

Expressiveness Oral

6 - 1

14 - 3

22 - 1

30 - 2

38 - 1

Expressiveness-Written

2 - 3

10 - 4

27 - 3

35 - 2

43 - 1

Total 9 x2 = 18 (Score)

Total 8 x2 = 16 (Score)

Total 13 x2 = 26 (Score)

APPENDIX E  
CHARLENE'S LSI SCORES

Charlene  
C.I.T.E. Learning Styles Instrument  
Score Sheet

## Visual Language

5 - 4  
13 - 3  
21 - 4  
29 - 2  
37 - 4

## Social-Individual

4 - 4  
12 - 4  
20 - 2  
28 - 4  
45 - 1

## Auditory Numerical

7 - 4  
15 - 2  
23 - 2  
31 - 4  
39 - 4

Total 17 x2 = 34 (Score) Total 15 x2 = 30 (Score) Total 16 x2 = 32 (Score)

## Visual Numerical

9 - 3  
17 - 3  
25 - 4  
33 - 4  
41 - 2

## Social-Group

8 - 3  
16 - 3  
24 - 2  
32 - 4  
40 - 1

## Kinesthetic-Tactile

1 - 4  
18 - 4  
26 - 1  
34 - 2  
42 - 4

Total 16 x2 = 32 (Score) Total 13 x2 = 26 (Score) Total 15 x2 = 30 (Score)

## Auditory Language

3 - 2  
11 - 3  
19 - 2  
36 - 2  
44 - 4

## Expressiveness Oral

6 - 1  
14 - 3  
22 - 1  
30 - 2  
38 - 2

## Expressiveness-Written

2 - 3  
10 - 3  
27 - 2  
35 - 2  
43 - 3

Total 13 x2 = 26 (Score) Total 9 x2 = 18 (Score) Total 13 x2 = 26 (Score)

APPENDIX F  
TIFFANY'S LSI SCORES

Tiffany

C.I.T.E. Learning Styles Instrument  
Score Sheet

## Visual Language

5 - 2  
 13 - 3  
 21 - 3  
 29 - 3  
 37 - 4

Total 15 x2 = 30 (Score)

## Social-Individual

4 - 3  
 12 - 3  
 20 - 2  
 28 - 4  
 45 - 2

Total 14 x2 = 28 (Score)

## Auditory Numerical

7 - 2  
 15 - 3  
 23 - 2  
 31 - 4  
 39 - 3

Total 14 x2 = 28 (Score)

## Visual Numerical

9 - 4  
 17 - 3  
 25 - 2  
 33 - 3  
 41 - 2

Total 14 x2 = 28 (Score)

## Social-Group

8 - 3  
 16 - 4  
 24 - 3  
 32 - 4  
 40 - 4

Total 18 x2 = 36 (Score)

## Kinesthetic-Tactile

1 - 3  
 18 - 4  
 26 - 4  
 34 - 4  
 42 - 4

Total 19 x2 = 38 (Score)

## Auditory Language

3 - 2  
 11 - 4  
 19 - 2  
 36 - 2  
 44 - 4

Total 14 x2 = 28 (Score)

## Expressiveness Oral

6 - 4  
 14 - 2  
 22 - 1  
 30 - 4  
 38 - 2

Total 13 x2 = 26 (Score)

## Expressiveness-Written

2 - 3  
 10 - 4  
 27 - 3  
 35 - 4  
 43 - 3

Total 17 x2 = 34 (Score)

APPENDIX G  
BRENDA'S LSI SCORES

Brenda

C.I.T.E. Learning Styles Instrument  
Score Sheet

## Visual Language

5 - 2  
13 - 2  
21 - 1  
29 - 4  
37 - 4

## Social-Individual

4 - 4  
12 - 4  
20 - 1  
28 - 4  
45 - 1

## Auditory Numerical

7 - 4  
15 - 2  
23 - 4  
31 - 4  
39 - 4

Total 13 x2 = 26 (Score) Total 14 x2 = 28 (Score) Total 18 x2 = 36 (Score)

## Visual Numerical

9 - 4  
17 - 4  
25 - 4  
33 - 1  
41 - 4

## Social-Group

8 - 4  
16 - 4  
24 - 1  
32 - 4  
40 - 4

## Kinesthetic-Tactile

1 - 4  
18 - 1  
26 - 4  
34 - 2  
42 - 3

Total 17 x2 = 34 (Score) Total 17 x2 = 34 (Score) Total 17 x2 = 34 (Score)

## Auditory Language

3 - 1  
11 - 4  
19 - 1  
36 - 1  
44 - 4

## Expressiveness Oral

6 - 1  
14 - 2  
22 - 4  
30 - 1  
38 - 2

## Expressiveness-Written

2 - 4  
10 - 4  
27 - 1  
35 - 4  
43 - 2

Total 11 x2 = 22 (Score) Total 10 x2 = 20 (Score) Total 15 x2 = 30 (Score)

APPENDIX H  
SHARON'S LEARNING STRATEGIES

## LEARNING STYLES STRATEGIES PLAN

Name: Sharon

### Learning Styles

Major Styles:

Social-Individual  
 Visual numerical  
 Visual Language

Minor Styles:

Auditory numerical  
 Expressiveness-Written

Negligible Use:

Kinesthetic-Tactile  
 Social-Group  
 Auditory Language  
 Expressiveness-Oral

There are many ways you can use this information.

1. Change your study habits to reflect your style.
2. Select teachers/classes that support your style.
3. Adapt to any classroom situation by using special techniques.

### Learning Strategies

Since you are primarily visual, you may want to convert as much of your study materials as you can to visual items: pictures, charts, drawings, written words.

Social-Individual means that you prefer to learn new information when you are alone. It means you are more comfortable when you have time to read through and think about the material before you have to discuss it or be tested on it.

You have a slight preference for math information, both auditory and visual. It may be helpful to read a math problem aloud or to listen to the teacher or someone else read or tell about it first, then try to work it on paper.

Since many classes will be lecture oriented, you may want to tape-record the lectures, so that you can relax and listen in class rather than taking a lot of notes. This method is particularly helpful for visual people who depend heavily on good notes.

APPENDIX I  
CHARLENE'S LEARNING STRATEGIES

## LEARNING STYLES STRATEGIES PLAN

Name: Charlene

### Learning Styles

Major Styles:

Visual Language

Minor Styles:

Social-Individual

Social-Group

Kinesthetic-Tactile

Auditory Language

Auditory numerical

Visual numerical

Expressiveness-Written

Negligible Use:

Expressiveness-Oral

There are many ways you can use this information.

1. Change your study habits to reflect your style.
2. Select teachers/classes that support your style.
3. Adapt to any classroom situation by using special techniques.

### Learning Strategies

Since you are primarily visual, you may want to convert as much of your study materials as you can to visual items: pictures, charts, drawings, written words.

You scored slightly more Social-Individual than Group, which means that you may prefer to learn new information when you are alone. You may be more comfortable when you have time to read through and think about the material before you have to discuss it or be tested on it.

You have a slight preference for math information, both auditory and visual. It may be helpful to read a math problem aloud or to listen to the teacher or someone else read or tell about it first, then try to work it on paper.

Since many classes will be lecture oriented, you may want to tape-record the lectures, so that you can relax and listen in class rather than taking a lot of notes. This method is particularly helpful for visual people who depend heavily on good notes.

Also, some hands-on activities or role playing may help you learn certain concepts.

APPENDIX J  
TIFFANY'S LEARNING STRATEGIES

## LEARNING STYLES STRATEGIES PLAN

Name: Tiffany

### Learning Styles

Major Styles:

Social-Group  
Kinesthetic-Tactile  
Expressiveness-Written

Minor Styles:

Visual numerical  
Visual Language  
Auditory numerical  
Auditory Language  
Social-Individual  
Expressiveness-Oral

Negligible Use: N/A

There are many ways you can use this information.

1. Change your study habits to reflect your style.
2. Select teachers/classes that support your style.
3. Adapt to any classroom situation by using special techniques.

### Learning Strategies

Social-Group means that you prefer to learn new information in a group or classroom setting. It means you are more comfortable when there is someone with whom to discuss new material.

Since you are primarily kinesthetic-tactile, you may want to use role playing and hands-on activities like building models.

You also have a strong preference for written expression, which means you are more comfortable with written tests and material.

All the other styles were minor styles for you , with high scores. This fact means that you can easily learn to use the minor styles by practicing different study methods. For the visual styles, you can use pictures, charts, and flash cards to learn new material. The auditory styles can be enhanced by using taped lectures, by talking over the material with someone else, or by reading aloud. This discussing of the material with someone else would also help the expressiveness-oral style. You could become more comfortable answering questions aloud in class.

APPENDIX K  
BRENDA'S LEARNING STRATEGIES

## LEARNING STYLES STRATEGIES PLAN

Name: Brenda

### Learning Styles

Major Styles:

Social-Group

Kinesthetic-Tactile

Visual and Auditory numerical

Minor Styles:

Visual and Auditory language

Social-Individual

Expressiveness-Oral and Written

Negligible Use: N/A

There are many ways you can use this information.

1. Change your study habits to reflect your style.
2. Select teachers/classes that support your style.
3. Adapt to any classroom situation by using special techniques.

### Learning Strategies

Since you are primarily kinesthetic-tactile, you may want to use role playing and hands-on activities like building models.

You also have a strong preference for numbers, both hearing and seeing them. This means that math will come easier for you. You could seek to develop your language preferences since those scores were in the minor style range. Do this by reading aloud and talking about your reading with someone. Also, to develop the visual part, you could make flash cards for your vocabulary words.

Social-Group means that you prefer to learn new information in a group or classroom setting. It means you are more comfortable when there is someone with whom to discuss new material.