PERCEPTUAL LEARNING STYLES OF ADULT STUDENTS AT MERIDIAN TECHNOLOGY CENTER

By

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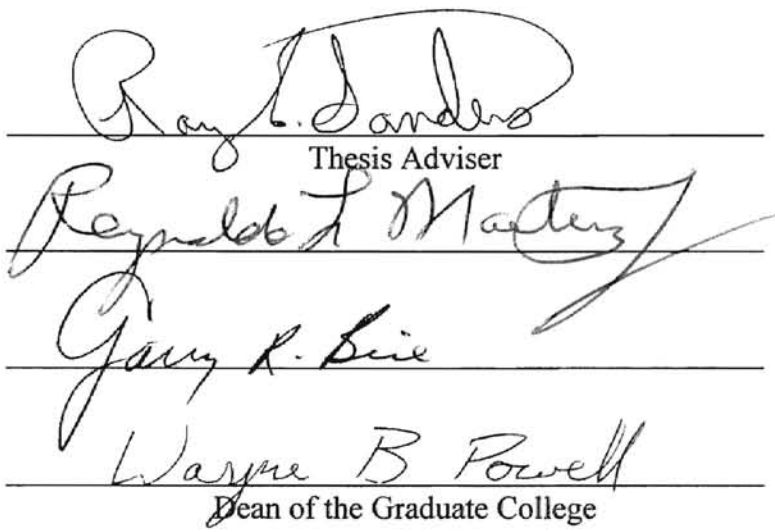

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CHAPTER I

INTRODUCTION

Meridian Technology Center began in Stillwater, Oklahoma as Indian Meridian Area Vocational Technical School on July 1, 1973 with Dr. Fred A. Shultz as Superintendent/CEO. Classes began in August of 1975 with 13 daytime programs and a staff of approximately 30. The facility began with 92,000 square feet and now encompasses over 182,000. In addition, the school has now grown to 31 daytime and adult full-time programs and over 100 full-time employees.

The philosophy of Meridian Technology Center is:

> "There has been a general awakening on the part of society which recognizes the need and potential of vocational education as an educational process. It is one that should be perceived as a means of expanding the spectrum of educational opportunities for young people and adults.
>
> Individuals must be trained to meet the occupational manpower needs of the country. Therefore, Meridian Technology Center provides quality vocational education and training for any person who has the initiative, desire, and ability to profit from it. It will strive to provide students and adults who enter the labor market directly after leaving the training program with a set of marketable skills appropriate for the positions that will be available to them" (Meridian Technology Center Employee Manual).

Meridian Technology Center has a wide variety of both full-time and short-term programs with teachers using an assortment of teaching techniques to ensure the success of their students. The student population consists of both high school and adult

students intermixed in the daytime programs. However, the evening programs contain exclusively adult students (18 years of age or older).

Learning styles are "characteristic cognitive, affective, and psychological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (National Association of Secondary School Principals, 1979, p. 4). Learning styles vary in each person and "regardless of the model, learning styles are unique and different" (National Association of Secondary School Principals, 1988, p. 2). The ability to identify learning styles in the classroom can lead to an enhanced educational experience for the adult student. "Students tend to learn and remember better, and to enjoy learning more when they are taught through their learning style preferences" (Dunn and Dunn, 1993, p. 26). Identification of learning styles can also benefit the teacher in planning and updating curriculum.

A dominant learning style usually develops early in life and continues throughout a lifetime. "A dominant preference usually forms early in life, however, and does not change radically" (National Association of Secondary School Principals, 1979, p. 127). Students can also learn by developing a secondary learning style but tend to do best using their primary learning style. "When students were introduced to new material through their perceptual preference, they remembered significantly more than when they were introduced through their least preferred modality" (Dunn and Dunn, 1993, p. 16). It should also be noted that "learning styles describe how a student learns, not how well or how he has learned" (National Association of Secondary School Principals, 1988, p. 30). "Whatever you can do to accommodate your student's styles will help them feel

comfortable, be better able to concentrate in their way, and gradually improve their grades and attitudes toward school" (Dunn and Dunn, 1993, p. 98).

"Sensory theory states that we all have a preference for taking in our information either visually, auditorily, or kinesthetically" (Beale-Marks, 1994, p. 44). This study will focus on the sensory theory of learning styles and identify the seven perceptual learning styles identified by Galbraith (1984): visual, aural, interactive, print, kinesthetic, haptic, and olfactory.

Need of the Study

This study is needed in order to identify learning styles of adults in the classroom. There has not been a research study of this nature done at Meridian Technology Center of adult students.

Research shows that students who are taught through their preferred learning style will generally do better in the classroom than students who are not taught through their preferred learning style. ". . . when students are taught through their identified learning style preferences, they evidence statistically increased academic achievement, improved attitudes toward instruction, and better discipline than when they are taught through their nonpreferred styles" (Dunn and Dunn, 1993, p. 3). "Learning style diagnosis opens the door to placing individualized instruction on a more rational basis. It gives the most powerful leverage yet available to educators to analyze, motivate, and assist students in school." (National Association of Secondary School Principals, 1979, p. 132).

There is a need to know the learning styles of adult students at Meridian Technology Center so students and teachers can provide a better educational environment

that promotes learning for each student. "If students cannot learn the way we teach them, we must teach them the way they learn" (National Association for Secondary School Principals, 1988, p. 16).

Problem

The problem of this study is that teachers have one particular teaching style in the classroom that tends to reach only a portion of the student population. Research has stated that teachers tend to teach the way they were taught which does not always reflect their preferred learning style. "Teachers often teach in the ways that they have been taught" (Keefe, 1988, p. 38). Other research has also stated, ". . . junior college educators used a style of teaching which matched their own preferred learning style . . ." (Galbraith and Sanders, 1987, p. 175).

I have observed in the classroom that instructors at Meridian Technology Center tend to have their own teaching styles which they use in their classrooms. This method of teaching is effective for students who learn through that style but can be ineffective for students who have a different learning style. "Research evidence indicates that when teachers begin to adjust instruction to diagnosed learning style differences, academic achievement increases, attitude toward learning is more positive, and fewer discipline problems occur" (Keefe, 1988, p. 42).

Purpose

The purpose of this study is to identify the perceptual learning styles of adult students at Meridian Technology Center using James and Galbraith (1984) Perceptual Learning Style Inventory (PLSI). Personal and geographic data is also analyzed to

determine if there are any differences of perceptual learning styles between groups based upon the personal and geographic data collected.

The research question that was investigated was:

1. What are the perceptual learning styles of adult students currently enrolled at Meridian Technology Center?

Scope

This study is limited by the entire population. Also, it should be noted that this is a subjective topic and data is affected by the student's survey response that can change somewhat depending on the student's attitude or state of mind on the particular day the survey is administered. Although the survey instrument has been used in previous research, reliability and validity of the instrument have yet to be proven.

Benefits of Study

The study will benefit students, teachers, and Meridian Technology Center to make for an all around better educational experience by providing research on the current adult students learning styles by program. The objective of this study was to extend research on learning styles and obtain information that would be both relevant and useful to Meridian Technology Center. Awareness is the first step in learning to teach through learning style preference.

Identification of learning styles can be used to assist instructors in designing curriculum that can better meet individual learning styles of their classroom. Based upon the information obtained from this study it is hoped that Meridian Technology Center

faculty and students will gain valuable information to be used in planning curriculum and improving their educational opportunities, respectively.

Definition of Terms

The following terms were used in this study. These terms were taken from The New Lexicox Webster's Dictionary of the English Language, unless otherwise noted.

Adult - a mature, fully grown person who has passed adolescence; a person who has come of age.

Attrition rate - a factor, normally expressed as a percentage, reflecting the degree of losses of personnel or material due to various causes within a specified period of time.

Aural - relating to the ear or to hearing.

Haptic - the science concerned with the tactile sense. (Stedman's Medical Dictionary).

Interactive - to act upon each other.

Kinesthetic - the sensation of movement, tension, etc. in various body parts.

Learner - to acquire knowledge of or skill in by study, instruction, practice, or experience.

Learning Style - the way in which each learner begins to concentrate on, process, and retain new and difficult information (Dunn and Dunn, 1993, p. 2).

Olfactory - of or relation to smelling or the sense of smell.

Perceptual Learning Style - extracting information from the environment through the senses (Matthews, 1995, p. 12).

Perceptual Learning Style Inventory - designed by James and Galbraith (1984), to be specifically used for self-perception of learning styles (Tackett, 1988, p. 5).

Print - to write or draw (letters) in imitation of type forms.

Tactile - relating to touch or to the sense of touch. (Stedman's Medical Dictionary).

Visual - the act of seeing or the ability to see, a picture formed in the mind.

CHAPTER II

REVIEW OF LITERATURE

Definition of Learning Styles

Learning styles consist of cognitive, affective, and physiological behaviors. Cognitive styles are "information processing habits representing the learner's typical mode of perceiving, thinking, problem solving, and remembering" (Messick, 1969, p. 12). In other words, each learner has their own unique way of perception, organization, and retention of information. It is important to note that cognitive styles are not the same as intellectual abilities. "Learning style encompasses at least 21 different variables, including each person's environmental, emotional, sociological, physiological, and cognitive processing preferences" (Dunn and Dunn, 1993, p. 31).

Affective learning styles are a part of the learner's personality that deals with attention, emotion, and values. These styles involve values and cannot be directly observed.

Physiological styles are based on the function of the human body. They are things like sex-related differences, nutrition, health, and reaction to the physical environment.

Learning styles are made up of three elements which can affect people of any age. These elements are environmental, emotional, and physical. Environmental elements are things such as sound, light, temperature, and design. Emotional elements are motivation, persistence, responsibility, structure, and sociological. Physical elements are perceptual

strengths, intake, time, mobility and maturity.

The terminology used to describe learning styles varies widely throughout research. "There is no widely accepted definition of learning style, and the concept takes on a somewhat different meaning depending on the definition used" (Blank and James, 1993, p. 84).

Visual learners prefer to use their eyes to learn and like to see pictures and visual aids. "Visual learners prefer visual, pictorial, or graphic representations of experience" (Keefe, 1988, p. 10). They like teachers to write things on the board and the student wants to write everything down. "People who like to see visual stimuli such as pictures, slides, graphs, tables, demonstrations, etc. probably are visual learners" (James and Galbraith, 1985, p. 20).

Aural learners use their ears to learn. They like to listen to lectures or a chapter read on tape and do not have a desire to write things down or take notes. "Auditory listeners like to listen to others talk about experience" (Keefe, 1988, p. 10). "People who usually do not talk much and who feel that they learn best when the information is presented verbally may be aural learners" (James and Galbraith, 1985, p. 20).

Interactive learners like to discuss all the issues and talk about what they are learning. These types of learners do best in group discussions and group projects. "Small group discussions or the give-and-take of debate activities are several means through which interactive individuals learn best" (James and Galbraith, 1985, p. 20).

Print learners like to have everything in writing. They learn best by reading books and printed material. "This is the learner who loves to read books, journals, magazines

and finds that he or she retains easily the information that is read" (James and Galbraith, 1985, p. 20).

Kinesthetic learners will use their body to learn. They like to be physically involved and will usually be the person who wants to touch all the knobs and push every button. Because of their need to be comfortable, they may move around a lot by fidgeting or slouching in their chair. They express themselves through their body language. ""Someone who is in constant motion while reading or listening may be a kinesthetic learner" (James and Galbraith, 1985, p. 20).

Haptic learners prefer to learn by touching and holding materials. They tend to do well in laboratory classes where they can touch and measure everything. Haptic learners like to take notes when listening to lecture. "A haptic person is someone who has to feel objects or to touch as many things as possible" (James and Galbraith, 1985, p. 20).

Olfactory learners prefer to learn through the sense of smell. These type of learners do well when they can associate a smell with an activity such as chemistry. "People who vividly associate some information with a particular smell or taste probably fall within this learning style" (James and Galbraith, 1985, p. 21).

"No learning style pattern is better or worse than the other. Each style encompasses similar intelligence ranges" (Dunn and Dunn, 1993, p. 26). This research reflects the theory that just because one student prefers to listen to a lecture on audio tape while another student prefers to watch a video tape does not make one student more intelligent than the other. "Individual style reporting raises student awareness of the different ways individuals learn and the fact that these differences carry with them no judgment of right or wrong" (Keefe, 1988, p. 37).

Importance of Identifying Learning Styles

There are many reasons why it is important to be able to identify learning styles. ".....students have more positive attitudes towards school and achieve more knowledge and skills when taught, counseled, or advised through their natural or primary style rather than through a style that is secondary or undeveloped, particularly when adjusting to a new situation that creates stress....." (Sims, 1995, p. 200). Not only do students generally do better in school, but they can also apply this knowledge in their career and personal life.

In an article from The Teaching Professor, 1993, Sims (1995) quoted: "the most realistic approach to the accommodation of learning styles in teaching programs should involve empowering students through knowledge of their own learning styles" (p. 138). Although this would not take responsibility away from the teacher, it would give the student more responsibility for their own education. This increased self-knowledge would enable the student to use their learning style to increase their learning opportunities.

Teachers would be able to plan learning opportunities that were more in line with the student's learning style. "Learning styles can be an extremely important element in the move to improve curricula and teaching" (Claxton and Murrell, 1987, p. 1). Incorporation of a variety of activities into the curriculum which address different learning styles will provide a higher success rate of the students.

Benefits of Identifying Learning Styles

The student would be aware of their learning style which should lead to a higher level of learning. "Acceptance of style as a fundamental strength of each person contributes to the development of self-esteem and, ultimately, to achievement" (Sims, 1995, p. 207).

Teachers would be able to incorporate a variety of learning activities into the curriculum in order to meet the needs of the learners. "Information on styles, when linked with other data on students, holds great promise for helping instructors to improve their teaching and enhance student learning" (Sims, 1995, p. 208).

Meridian Technology Center could benefit through a lower attrition rate. It has been shown that when students enjoy their educational experience it tends to improve their educational experiences which in turn lowers attrition rate. "Counselors and faculty may find information about learning style helpful in dealing with the problem of attrition" (Claxton and Murrell, 1987, p. 59).

Application of Learning Styles

Information gained through the identification of learning styles can be applied in the classroom to improve the educational experience of the student. Instructors can apply this information to modify their teaching style in order that the majority of students in their classroom learn through their preferred learning style. "Modification of the teaching style may contribute to a more successful experience for the learner and the instructor" (Galbraith and Sanders, 1987, p. 171). Teachers can modify their teaching

style by incorporating a variety of teaching methods into their curriculum rather than teaching by one method alone.

Learning Style Inventories

Campbell (1991) noted that there are at least 32 commercially published instruments being used by researchers and educators to assess the different learning styles. Some of the most widely used instruments are:

1. Learning Styles Questionnaire (LSQ) was developed by Honey and Mumford to identify the four basic styles of learning (activist, reflector, theorist, and pragmatist) found in managers. This is an 80 item questionnaire designed so that the respondents agree or disagree;
2. Grasha-Reichmann Learning Styles Questionnaire consists of 90 items and has a self-report scale. This questionnaire is designed to classify three learning styles (dependent, collaborative, and independent);
3. Dunn and Dunn Model is based on an individual's response to five categories of elements: environmental, emotional, sociological, physical, and psychological. In this questionnaire the needs or preferences of the learners adds up to his or her learning style;
4. Price, Dunn and Dunn Productivity Environmental Preference Survey is a 100 item survey designed to produce a profile clustered around 21 different elements. It is based on how a person prefers to learn rather than why;
5. Murrell's Learning Model Instrument was designed for managers and based on a person's preference for cognitive or affective learning and concrete or abstract

experiences. This 20 item questionnaire results in four learning domains;

6. Guglielmino Learning Style Inventory is a 58 question, self scoring instrument designed for the young adult and adult student and measure the students readiness for self-directed or self-paced instruction; and

7. Jacobs-Fuhrmann Learning Inventory is designed to assess the trainer and trainee learning style. It relates to maturity levels of the learners and diagnoses three styles: dependent, collaborative, and independent.

Learning Styles and Instructional Planning

West and Foster (1976) outlined three types of educational approaches to individual differences: mastery learning, programmed instruction, and open education.

Mastery learning proposes that instructors plan ways that subject matter is mastered by the majority of the students.

Programmed instruction provides a way to organize subject matter to accomplish three goals: (1) allow students to work individually or in groups at their own rate of speed; (2) provide frequent opportunities for students to respond to subject matter; and (3) provide feedback to each student as to the accuracy of their responses.

Open education can mean a wide variety of things like playing games or painting. It involves small group instruction that is informal and structured around the student's interests.

Dunn and Dunn (1993) discuss a variety of strategies to design curriculum to meet individual learning styles. Some of their suggestions are:

1. Redesign the classroom by changing seating arrangements, lighting, temperature, and developing different areas in the classroom designed for quiet, independent study or group interaction learning;
2. Use different guidelines for teaching global versus analytic learners;
3. Design small group instructional techniques such as circle of knowledge, team learning, brainstorming, and case study;
4. Design specific resources to meet the needs of your students various learning styles such as games, task cards, and puzzles for haptic and kinesthetic learners;
5. Develop programmed learning sequences so material can be learned in small, simple steps. This method, if developed correctly, can be used for all learning styles;
6. Use contract activity packets which generally are appropriate for average or above average, or gifted students; and
7. Multisensory instructional packets can also be used in the curriculum and are especially useful for students who have a hard time sitting quietly for long periods of time.

The availability of instructional materials to meet individual learning styles in the classroom is limitless. Ideas for resources based on the Dunn and Dunn Model can be found in their book (1993).

Similar Research

A large amount of research has been done regarding perceptual learning styles. A summary of some of the research similar to this study is:

1. James and Blank (1991) compared perceptual learning styles of adult high school graduates and nongraduates. This study showed that there were significant differences between these two groups. "The data indicate that there were significant differences between high school graduates and nongraduates on five of the seven perceptual learning style subtests" (James and Blank, 1991, p. 104). The MMPALT II instrument was used for this research.
2. Galbraith and Sanders (1987) compared the relationship between perceived learning style and teaching style of junior college educators. This study showed that teachers tend to teach the way they learn. "In this study it was found that junior college educators used a style of teaching which matched their own preferred learning style regardless of the area they taught in, sex, years of teaching experience, or educational attainment" (Galbraith and Sanders, 1987, p. 175). A survey questionnaire was used to collect data which consisted, in part, of the Perceptual Learning Style Inventory (PLSI).
3. Blank and James (1993) analyzed learning styles of postsecondary industrial education students. This study showed that instructors should use a combination of methods to present information. "The findings also indicate that instructors should very frequently present information to students using a combination of modalities – specifically, auditory, visual, and kinesthetic" (Blank and James, 1993, p. 98). The Learning Style Inventory (LSI) was used to gather data.
4. Sarah Frances Little Soliday did a study of personality types/learning styles of secondary vocational technical education students. This research showed there were no differences in personality type/learning style of students enrolled in

vocational technical programs by program or gender. However, "A difference in personality types/learning styles was found to exist between vocational technical education secondary students and non-vocational technical education secondary students" (Soliday, 1992, p. 63). The Myers Brigg Type Indicator (MBTI) was used for data analysis.

5. Teresa Lynn Tackett (1988) did a study on perceptual learning styles of fire service personnel. This study concluded that there were no significant differences in perceptual learning styles of fire service personnel. "There were no significant differences among demographic groups surveyed in this study" (Tackett, 1988, p. 36). The Perceptual Learning Style Inventory (PLSI) was used for data analysis.

Summary

The need to identify learning styles to enhance educational experiences exists in the educational environment. This information can positively affect the student, the teacher, and the educational systems by enabling them to identify the way students learn best and enhancing curriculum to meet the needs of everyone involved.

The literature reviewed revealed there have been many studies conducted on learning styles and many instruments developed to identify learning styles. Research has also shown there are several ways to adapt curriculum to meet individual learning styles and both the teacher and the student should be responsible for the overall educational experience. The literature reviewed revealed there have been a lot of past studies of learning styles that have focused on a variety of areas. This is a topic that requires continual research due to its complexity and dimension.

It is important to realize that "whatever the educational program - labeled or unlabeled - and the methods or resources, both administrators and instructors should be aware that students succeed best by utilizing their own most natural learning styles" (National Association of Secondary School Principals, 1979, p. 111).

CHAPTER III

PROCEDURES

Research Design

This research study was designed to identify learning styles of adult students enrolled in various programs at Meridian Technology Center, then evaluate the differences. The survey instrument used was developed by James and Galbraith (1984) referred to as the Perceptual Learning Style Inventory (PLSI). Personal and geographic data was also collected for research purposes. The inventory identified each individual's learning style: visual, aural, interactive, print, kinesthetic, haptic, and olfactory. This information will be utilized by instructors and students to enhance their educational experiences. This chapter describes the population, sampling procedures, instrument description, and statistics.

Population

The population was 139 adult students enrolled full-time and part-time in educational programs at Meridian Technology Center during Fall, 1997. The majority of these students live within the school district of Meridian Technology Center and all students are 18 years of age or older. The school districts consist of the following towns located in Lincoln, Payne, and Logan counties: Agra, Carney, Glencoe, Guthrie, Pawnee, Perry, Perkins-Tryon, Ripley, and Stillwater. The educational programs surveyed are:

Air Conditioning and Refrigeration, Auto Body, Auto/Diesel Technology, Business Training Center, Commercial Food Production, Cosmetology, Drafting, Health Science Technology, Industrial Technology, Machine Tool, Masonry, Practical Nursing, Radiologic Technology, Residential and Commercial Construction, and Welding Technology.

The samples are those students who volunteered to complete the survey during class time.

Sampling Procedures

A total number of adult students enrolled in Meridian Technology Center was obtained from the person responsible for enrollment and attendance in the Daytime Instruction Office at Meridian Technology Center. These records are kept on a database which she is responsible for maintaining.

One hundred and thirty nine surveys were distributed to adult students by the teacher of each program during class. A copy of the survey is provided in Appendix A. A population distribution method was used by asking all adult students enrolled at Meridian Technology Center to complete a survey. Population is defined as "all subjects or objects possessing some common specified characteristic" (Key, 1996, p. 168). Prior approval was obtained from Meridian Technology Center administration to administer the survey during class time. Instructions for completion and purpose of the survey were described in a cover letter attached to the survey (Appendix B). In addition, a letter was distributed to each teacher which included instructions on distribution (Appendix C). This negated a need for teacher training on administering the survey.

Teachers were asked to distribute the survey and cover letter to their adult students. The teacher was given two weeks to administer, collect, and return the survey. A reminder notice was sent by Email to all teachers three days before the surveys were due back to the researcher (Appendix D).

The students were instructed to complete the survey on a voluntary basis and place the completed survey in a manila envelope which was provided. The survey took approximately five minutes to complete. All surveys, by program, were sealed in the manila envelope by the teacher. The teacher was asked to seal the envelop and return the sealed envelope to the researcher by a specified date.

The week after the return deadline two additional surveys were received. Three weeks from the date the survey was sent, results were compiled using the PLSI score sheet (Appendix E). A total of 138 surveys were returned with 23 of those surveys not usable due to incompleteness. This resulted in a population size of 115. The total population was utilized. A return rate of 99% was achieved with an 83% rate of useable surveys. The distribution of the returned surveys were not even across the total population because three of the programs were not represented. The programs which were not represented were a part of the unusable surveys discussed previously.

All surveys were hand numbered before distribution to the teachers. Records were kept of which programs were assigned which numbers in order to determine responses by program.

Instrument Description

The PLSI designed by James and Galbraith (1984) was used in this research. This instrument was specifically designed to measure self-perception of perceptual learning styles. The instrument contains 28 learning techniques that correlate to one of the seven perceptual learning styles: visual, aural, interactive, print, kinesthetic, haptic, olfactory. The instrument was slightly altered from its original format based upon the theory that an eye appealing document tends to be better perceived by the reader. "The appearance of a message influences reader receptivity to it" (Huseman, Lahiff, and Penrose, 1988, p. 98). The title of the survey was formatted differently from the original survey instrument by centering text and increasing spacing in an attempt to enhance the appearance of the document.

Students were asked to check the strategy/technique through which they thought they learned best. More than one strategy/technique could be marked. A scoring sheet was used to analyze the results.

Permission to use the PLSI instrument was obtained from Dr. Michael W. Galbraith (Appendix F).

Statistics

The information collected conveyed ordinal data with independent samples. The data was analyzed using inferential statistics. According to the table developed by Krejcie and Morgan (1970) the sample size was representative of the 139 adult students enrolled at Meridian Technology Center with a .95 confidence level (Key, 1996, p. 88). The population distribution method was used. Information was analyzed by age,

education, gender, program, trade and industrial programs by gender, health programs by gender, and business training center program by gender using the Kruskal-Wallis H test for non-parametric statistics. This analysis tested the data for differences between groups to see if there were any significant differences in the perceptual learning styles of adult students currently enrolled in educational programs at Meridian Technology Center. The calculation for Kruskal Wallis H is:

$$H = \left(\frac{12}{N(N+1)} \sum_{i=1}^{k} \frac{R_i^2}{n_i} \right) - 3(N+1)$$

k = number of categories

N = number of cases in the sample

n_i = number of cases in the i-th category

R_i = sum of the ranks in the i-th category

Results were ranked in order of the most frequently chosen perceived learning style to the least chosen perceived learning style. Once the ranking was completed the Kruskal-Wallis H test was used to evaluate if there were any significant differences in perceived learning styles among students enrolled in programs at Meridian Technology Center.

An hypothesis was formulated: H_o - There are no significant differences in the preferred perceptual learning styles of adult students enrolled at Meridian Technology Center by age, education, gender, program, trade and industrial programs by gender, health programs by gender, and business training center program by gender.

CHAPTER IV

ANALYSIS OF DATA

The purpose of this study was to identify the perceptual learning styles of adult students enrolled in programs at Meridian Technology Center using James and Galbraith's (1984) Perceptual Learning Style Inventory (PLSI).

A survey was conducted of 139 adult students using the PLSI. Each subject identified their perceived perceptual learning styles through the completion of the survey instrument. The data was then analyzed to address the research question of this study.

The survey measured the seven perceptual learning styles: visual, aural, interactive, print, kinesthetic, haptic, and olfactory as perceived by the student. The data was analyzed by rank ordering of perceptual learning styles as perceived by the student. Demographic data consisted of age, education, gender, and program.

This chapter consists of data analysis beginning with a description of the subjects using demographic data. This is followed by an analysis of the perceived perceptual learning styles as measured by the PLSI. The third section in this chapter compares perceptual learning styles by groups using demographic data. The research question and null hypothesis is stated in the fourth section based upon data analysis. The final section in this chapter summarizes the findings and implications of the data analysis.

Description of Subjects

One hundred and thirty eight adult students responded to the survey with 23 of the completed surveys being unusable due to incomplete information. A total of 115 usable surveys made up the population.

Table I summarizes the demographic characteristics. The respondents were adult students currently enrolled at Meridian Technology Center. The majority of the respondents live within the school district of Meridian Technology Center which consists of the towns of Agra, Carney, Glencoe, Guthrie, Pawnee, Perry, Perkins-Tryon, Ripley, and Stillwater. These towns are located in the counties of Lincoln, Logan, and Payne within the State of Oklahoma.

Age groups were divided into four groups, 17 respondents were between the ages of 18 to 30, 64 respondents were between the ages of 31 to 40, 29 respondents were between the ages of 41 to 50, and 5 respondents were greater than 50 years of age.

Education levels of respondents consisted of 5 still in high school, 78 completed high school, 16 completed a vocational program, 10 completed a two year degree program, 3 completed a four year degree program, and 3 completed a graduate degree program. Of the 115 respondents 33 were male and 82 were female.

Fifteen of the 17 programs were surveyed. The two programs not surveyed; Vocational Careers, and Home and Business Services, had no adult students currently enrolled. Of the 15 programs, 6 respondents were enrolled in Air Conditioning and Refrigeration, 5 in Auto Body, 4 in Auto/Diesel Technology, 40 in Business Training Center, 18 in Cosmetology, 6 in Drafting, 3 in Health Science Technology, 3 in Masonry,

TABLE I

DEMOGRAPHIC CHARACTERISTICS OF ADULT STUDENTS ENROLLED AT MERIDIAN TECHNOLOGY CENTER

Characteristic	Number	Percentage
Age		
18 to 30	17	15
31 to 40	64	56
41 to 50	29	25
greater than 50	5	4
Education		
Still in high school	5	4
High school	78	68
Vocational program	16	14
Two year degree program	10	8
Four year degree program	3	3
Graduate school	3	3
Gender		
Male	33	29
Female	82	71
Program Enrollment		
Air Conditioning and Refrigeration	6	5
Auto Body	5	4
Auto/Diesel Technology	4	3
Business Training Center	40	34
Commercial Food Production	0	0
Cosmetology	18	16
Drafting	6	5
Health Science Technology	3	3
Industrial Technology	0	0
Machine Tool	0	0
Masonry	3	3
Practical Nursing	18	16
Radiologic Technology	8	7
Residential and Commercial Construction	2	2
Welding	2	2

(n = 115)

18 in Practical Nursing, 8 in Radiologic Technology, 2 in Residential and Commercial Construction, and 2 in Welding. No useable responses were received from Commercial Food Production, Industrial Technology, and Machine Tool programs.

It should be noted that the Business Training Center had the largest population of adult students (34%) of all programs. This may have an affect on the findings regarding comparisons between programs. If the Business Training Center students learn through a different preferred learning style than the other programs the rankings could show a biased figure.

Perceived Learning Style as Measured by PLSI

The perceptual learning styles of adult students currently enrolled in programs at Meridian Technology Center were evaluated using the PLSI. Table II summarizes the rank orders of the seven perceptual learning styles. The respondents ranked the visual learning style as the highest overall perceived learning style with 84 responses. The second ranked interactive learning style contained 82 responses, third was print with 74 responses, haptic was fourth with 63 responses, aural was fifth with 61 responses, kinesthetic was sixth with 52 responses, and olfactory was the lowest ranked learning style with 19 responses.

The results of this ranking by the respondents suggest generalizability that the adult students enrolled at Meridian Technology Center self reported that they prefer to learn visually followed closely by the interactive style. Print learning styles also ranked with a high number of respondents as a preferred learning style followed by haptic and aural styles. Olfactory was shown to be the least preferred method of learning.

TABLE II

SUMMARY OF RANK ORDER OF PERCEIVED LEARNING STYLES OF ADULT STUDENTS ENROLLED AT MERIDIAN TECHNOLOGY CENTER, AS MEASURED BY THE PLSI

Learning Style	Frequency of Responses	Percentage	Rank Order
Visual	84	73	1
Interactive	82	71	2
Print	74	64	3
Haptic	63	55	4
Aural	61	53	5
Kinesthetic	52	45	6
Olfactory	19	17	7

(n = 115)

Comparison of Learning Styles by Groups

Demographic data was analyzed using the PLSI to compare the differences in learning styles. A Kruskal-Wallis H test was used for those comparisons using an 0.05 probability level (Noether, 1971, p. 224).

Age

The age demographics of the 115 subjects were broken down into four groups: 18 to 30, 31 to 40, 41 to 50, and greater than 50.

The data was analyzed using the Kruskal-Wallis H test. The results of the PLSI scores for each perceived learning style are shown in Table III. The calculated H-value (df = 3) was not significant at the .05 alpha level; therefore, the hypothesis was not rejected regarding age group.

TABLE III

SUMMARY OF RANK ORDER OF PERCEIVED LEARNING STYLES OF ADULT STUDENTS ENROLLED AT MERIDIAN TECHNOLOGY CENTER BY AGE

	Rank order by age group			
Learning Style	18 to 30 n = 17	31 to 40 n = 64	41 to 50 n = 29	Greater than 50 n = 5
Visual	1	3	1	1.5
Aural	6	4.5	5	1.5
Interactive	2	2	3	3
Print	3	1	2	4
Kinesthetic	5	6	7	6
Haptic	4	4.5	4	5
Olfactory	7	7	6	7

Three of the four age groups; 18 to 30, 41-50, and greater than 50, preferred the visual learning style. The visual style was ranked overall as the most preferred learning style. Interactive and print were chosen as the second most preferred learning style with olfactory ranking last by three of the four groups. Another interesting observation is that

three of the four groups; 18 to 30, 31 to 40, and 41 to 50 preferred the haptic style as their fourth choice. Table III reflects the wide range of preferred learning style by age group as measured by the PLSI.

Education

The respondents were asked to mark what level of education they had completed. The education level groups were: high school, vocational program, two year degree program, four year degree program, and graduate program. Of the 115 respondents 5 of

TABLE IV

SUMMARY OF RANK ORDER OF PERCEIVED LEARNING STYLES OF ADULT STUDENTS ENROLLED AT MERIDIAN TECHNOLOGY CENTER BY EDUCATION

	Rank order by completed education					
Learning Style	Enrolled in H.S n = 5	H.S. n = 78	Vocational n = 16	2 Year n = 10	4 Year n = 3	Graduate n = 3
Visual	4.5	1	3.5	1	1.5	1
Aural	6	5	2	4.5	3.5	4
Interactive	1	2	1	3	3.5	2
Print	2.5	3	3.5	4.5	1.5	3
Kinesthetic	4.5	6	6	6	5	6
Haptic	2.5	4	5	2	6	5
Olfactory	7	7	7	7	7	7

them were still enrolled in high school. As a result, an additional section was added to Table IV to reflect this data.

The results of the PLSI scores for each perceived learning style are shown in Table IV. The calculated H-value (df = 5) was not significant at the .05 alpha level; therefore, the hypothesis was not rejected regarding education.

The adult students enrolled at Meridian Technology Center indicated a preference for visual and interactive learning followed closely by print. Olfactory was ranked as the least preferred learning style by all six education levels.

TABLE V

SUMMARY OF RANK ORDER OF PERCEIVED LEARNING STYLES OF ADULT STUDENTS ENROLLED AT MERIDIAN TECHNOLOGY CENTER BY GENDER

	Rank order by gender	
Learning Style	Male n = 33	Female n = 82
Visual	1	3
Aural	4.5	4
Interactive	2	2
Print	4.5	1
Kinesthetic	6	6
Haptic	3	5
Olfactory	7	7

Gender

The respondents were asked to identify their gender. There were 33 males and 82 females.

The results of the PLSI scores for each perceived learning style are shown in Table V. The calculated H-value (df = 1) was not significant at the .05 alpha level; therefore, the hypothesis was not rejected regarding gender.

Of the 115 respondents ranked by gender both males and females preferred the visual and interactive learning style followed by the print learning style. Aural and haptic learning style were closely ranked as the fourth and fifth preferred learning style with olfactory shown as the least preferred style by both genders.

Program

The respondents were asked to identify the program they were enrolled in at Meridian Technology Center. There were fifteen out of seventeen programs identified with adult students. The twelve programs that responded to the survey were: Air Conditioning and Refrigeration, Auto Body, Auto Diesel Technology, Business Training Center, Cosmetology, Drafting, Residential and Commercial Construction, Health Science Technology, Masonry, Practical Nursing, Radiologic Technology, and Welding.

The results of the PLSI scores for each perceived learning style are shown in Table VI. The calculated H-values (df = 11) was not significant at the .05 alpha level; therefore, the hypothesis was not rejected regarding programs.

The overall consensus of perceived learning styles by programs was that interactive learning style was the most preferred style by programs. Visual and haptic made up the second and third most preferred learning style with print, kinesthetic, and.

TABLE VI

SUMMARY OF RANK ORDER OF PERCEIVED LEARNING STYLES OF ADULT STUDENTS ENROLLED AT MERIDIAN TECHNOLOGY CENTER BY PROGRAM

	Rank order by program											
Learning Style	Air. Condit. & Refrig. N = 6	Auto Body N = 5	Auto & Diesel Tech. N = 4	Bus Train. Center N = 40	Cosmo. N = 18	Draft. N = 6	Res. & Com. Const. N = 2	Health Science Tech. N = 3	Masonry N = 3	Pract. Nurs. N = 18	Rad. Tech N = 8	Weld. N = 2
Visual	1	4	4	2	2	2	2.5	4.5	3.5	2.5	2	2
Aural	3.5	6.5	4	3	6	4.5	5.5	6	3.5	4	4.5	6
Interactive	2	1	1	4	3	1.5	5.5	1.5	1.5	1	2	6
Print	6	5	4	1	4.5	4.5	5.5	4.5	5.5	2.5	2	3.5
Kinesthetic	5	2.5	6.5	5	4.5	6	1	3	5.5	5	4.5	3.5
Haptic	3.5	2.5	2	6	1	1.5	2.5	1.5	1.5	6	6	1
Olfactory	7	6.5	6.5	7	7	7	5.5	7	7	7	7	6

TABLE VII

SUMMARY OF RANK ORDER OF PERCEIVED LEARNING STYLES OF ADULT STUDENTS ENROLLED AT MERIDIAN TECHNOLOGY CENTER BY TRADE AND INDUSTRIAL EDUCATION PROGRAMS AND GENDER

Learning Style	Air Condit & Refrig. F=0 M=6		Auto Body F=0 M=5		Auto & Diesel Technology F=0 M=4		Cosmetology F=16 M=2		Drafting F=4 M=2		Res. & Com. Construction. F=0 M=2		Masonry F=0 M=3		Welding F=0 M=2	
Visual	0	1	0	4	0	4	2	1	1.5	2	0	2.5	0	3.5	0	2
Aural	0	3.5	0	6.5	0	4	6.5	2.5	4.5	2	0	5.5	0	3.5	0	6
Interactive	0	2	0	1	0	1	3	2.5	1.5	3	0	5.5	0	1.5	0	6
Print	0	6	0	5	0	4	5	2.5	4.5	5	0	5.5	0	5.5	0	3.5
Kinesthetic	0	5	0	2.5	0	6.5	4	7	6.5	6.5	0	1	0	5.5	0	3.5
Haptic	0	3.5	0	2.5	0	2	1	2.5	1.5	3	0	2.5	0	1.5	0	1
Olfactory	0	7	0	6.5	0	6.5	6.5	2.5	6.5	6.5	0	5.5	0	7	0	6

aural following fourth, fifth, and sixth, respectively. Olfactory was designated as the least preferred learning style by program.

Trade and Industrial Education Programs (T&I) by Gender

Table VII represents a further breakdown and ranking by comparison of trade and industrial education programs by gender. This data reflects that there are no significant differences between trade and industrial education programs when compared by gender.

The calculated H-value (df = 7) was not significant at the .05 alpha level; therefore, the hypothesis was not rejected regarding trade and industrial education programs by gender.

Only two of the eight programs compared by T&I were of mixed gender. The cosmetology male students prefer the visual learning style whereas the female students prefer the haptic learning style. In the drafting program male students prefer visual and aural learning styles and female students prefer the visual learning style. Both programs showed a very slight difference in rankings as compared to the rankings of all programs.

Health Programs by Gender

All health programs by gender were ranked in Table VIII. Data was analyzed and it was shown that there are no significant differences between health programs by gender.

The calculated H-value (df = 2) was not significant at the .05 alpha level; therefore, the hypothesis was not rejected regarding health programs by gender.

Radiologic Technology was the only program of the three that had a mixed gender. Results show that female radiologic technology students prefer interactive and kinesthetic learning styles whereas male radiologic technology students prefer visual and print learning styles.

TABLE VIII

SUMMARY OF RANK ORDER OF PERCEIVED LEARNING STYLES OF ADULT STUDENTS ENROLLED AT MERIDIAN TECHNOLOGY CENTER BY HEALTH PROGRAMS AND GENDER

Learning Style	Health Science Technology F =3	M = 0	Practical Nursing F = 18	M = 0	Radiologic Technology F = 6	M = 2
Visual	4.5	0	2.5	0	4	1.5
Aural	6	0	4	0	4	3.5
Interactive	1.5	0	1	0	1.5	3.5
Print	4.5	0	2.5	0	4	1.5
Kinesthetic	3	0	5	0	1.5	6
Haptic	1.5	0	6	0	4	6
Olfactory	7	0	7	0	7	6

Business Training Center Program by Gender

The business training center program consists of 34 female and 6 male students as shown in Table IX. There were no significant differences in business training center learning styles by gender.

The calculated H-value (df = 0) was not significant at the .05 alpha level; therefore, the hypothesis was not rejected regarding the business training center program by gender.

Both male and female students in the business training center prefer the print learning style.

TABLE IX

SUMMARY OF RANK ORDER OF PERCEIVED LEARNING STYLES OF ADULT STUDENTS ENROLLED AT MERIDIAN TECHNOLOGY CENTER BY BUSINESS TRAINING CENTER AND GENDER

Learning Style	Business Training Center F = 34	M = 6
Visual	3	3
Aural	2	3
Interactive	4	3
Print	1	1
Kinesthetic	5.5	6.5
Haptic	5.5	5
Olfactory	7	6.5

Research Question

The research question asked in this study was what are the perceptual learning styles of adult students enrolled at Meridian Technology Center? The PLSI measured all seven learning styles: visual, aural, interactive, print, kinesthetic, haptic, and olfactory. The data analysis showed that all seven learning styles were used by adult students enrolled at Meridian Technology Center. The rank orders of the seven learning styles

were analyzed as shown in Table II. The visual learning style was ranked first with 84 responses (73 percent). Interactive was ranked second with 82 responses (71 percent) followed by print ranked third with 74 responses (64 percent). The haptic learning style was ranked fourth with 63 responses (55 percent) and aural was ranked as fifth with 61 responses (53 percents). The sixth ranked learning style was kinesthetic with 52 responses (45 percent). And, olfactory ranked seventh with 19 responses (17 percent).

Hypothesis

A hypothesis was formulated: H_o - there are no significant differences in the preferred perceptual learning styles of adult students enrolled at Meridian Technology Center by age, education, gender, program, trade and industrial education programs by gender, health programs by gender, or business training center program by gender.

The seven demographics of groups analyzed in this research showed no significant differences in perceptual learning styles based on a .05 probability level. Therefore, there were no significant differences among the seven groups of adult students by age, education, gender, program, trade and industrial education programs by gender, health programs by gender, or business training center program by gender.

Summary of Findings

The research question addressed in this study was: what are the perceptual learning styles of adult students enrolled at Meridian Technology Center?

Data was analyzed on 115 adult students enrolled at Meridian Technology Center. Seven perceptual learning styles were ranked using the PLSI: visual, aural, interactive, print, kinesthetic, haptic, and olfactory. The perceptual learning styles were analyzed

through the use of self-assessed answers to the PLSI and by assessing learning style differences by demographic data of the respondents.

Findings from this research identified a variety of definitions for learning styles. "The relative lack of focus can be seen in the absence of a clear definition of learning style and the contradictory research results . . ." (Claxton and Murrell, 1987, p. 5). This further explains the need for additional research in this field.

The hypothesis was: H_o – there are no significant differences in the preferred perceptual learning styles of adult students enrolled at Meridian Technology Center by age, education, gender, program, trade and industrial programs by gender, health programs by gender, or business training center program by gender. The hypothesis was not rejected for all demographics analyzed: age, education, gender, program, trade and industrial programs by gender, health programs by gender, and business training center program by gender.

CHAPTER V

CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to identify the perceptual learning styles of adult students enrolled at Meridian Technology Center. This study will assist students and teachers at Meridian Technology Center in curriculum planning.

In this chapter conclusions of the research is given, and recommendations for future research are stated.

Conclusions

The conclusions for this study are based on the data analysis presented in Chapter IV. No differences in learning styles conclude that adult students can be treated similarly in the classroom.

Based upon the frequency of responses by the subjects, the visual learning style was the highest perceived preferred learning style. The olfactory style was the least preferred learning style. The seven styles were ranked as follows: visual, interactive, print, haptic, aural, kinesthetic, and olfactory. These findings suggests that instructors can incorporate more visual, interactive, and print exercises into the curriculum and be able to reach the majority of their adult students preferred learning styles.

The results of this ranking identifies that adult students enrolled at Meridian Technology Center perceive they prefer to learn through the use of visual aids or pictures.

They prefer that the teacher use things such as graphs, slides, and demonstrations in the classroom. The interactive and print styles were also ranked highly as a preferred learning style. Olfactory was the lowest ranked learning style which represents that the adults students do not prefer to learn through their sense of smell.

There were no significant differences among demographic groups sampled. There were some groups analyzed as having different preferred learning styles when compared to the overall ranking.

Age Group

In relation to learning styles ranked by age the data showed the visual style was preferred overall as the highest ranking perceptual learning style. Interactive and print styles were equally ranked as the second most preferred learning style by all age groups. The older group (greater than 50) preferred the aural learning style as their third ranked choice and the other three groups ranked aural as a fifth and sixth choice.

The majority of all adult students currently enrolled at Meridian Technology prefer to learn from visual aids. All age groups also learn best by reading books and materials and through interaction of group discussions.

Education

All adult students were ranked by level of education completed. This data showed students prefer to learn through the visual and interactive learning style. Adult students currently enrolled in high school or who had completed high school ranked the aural learning style as their fifth and sixth choice whereas the remaining four education groups ranked the kinesthetic style as their fifth and sixth choice.

This data shows that adult students who have completed a degree program prefer a visual learning style. Adult students who have completed high school or vocational training prefer an interactive learning style. This analysis concludes that teachers should use more visual aids and class discussions to reach the majority of their students no matter what their education level.

Gender

When perceived learning styles were compared by gender the data showed that females prefer a print learning style and males prefer a visual learning style. However, the remaining six perceptual learning styles were ranked almost equally showing that there are not significant differences in learning styles by gender.

This analysis concludes that teachers should use more visual aids and printed material in the classroom to reach both male and female students.

Program

Adult students enrolled by program showed no significant differences in perceptual learning styles. All choices had a wide degree of rankings except for the olfactory learning style which was ranked sixth or seventh in all instances. Data did not show one specific learning style ranked consistently as the most preferred style. Overall, the interactive learning style was ranked as the top choice by programs.

This analysis concludes that teachers should use more class discussions and debates to reach all of their students who prefer an interactive learning style.

Trade and Industrial Programs by Gender

Trade and industrial programs were all compared to one another by gender. There were seven programs in the trade and industrial program area: Air Conditioning and

Refrigeration, Auto Body, Auto and Diesel Technology, Cosmetology, Drafting, Residential and Commercial Construction, Masonry, and Welding.

Of the seven programs only two programs had mixed gender: Cosmetology and Drafting. Cosmetology showed males prefer the visual learning style while females prefer the haptic learning style. The males students in drafting ranked visual and aural as the preferred learning style while the female students preferred visual, interactive, and haptic.

This analysis shows that cosmetology teachers should use more visually oriented materials for the male students and more hands-on exercises for the females.

Health Programs by Gender

A comparison of health programs by gender was analyzed. The health programs were: Health Science Technology, Practical Nursing, and Radiologic Technology. Of the three programs only one, Radiologic Technology, had a mixed gender.

Data showed that Radiologic Technology male students preferred visual and print learning styles whereas the female students have a preference for interactive and kinesthetic learning styles.

Teachers in Radiologic Technology should use a combination of visual, print, interactive, and kinesthetic materials in the classroom to reach both male and female students.

Business Training Center Program by Gender

The Business Training Center program consists of 34 female students and 6 male students. The data collected showed that both female and male students both prefer to learn by print.

Teachers in this program could use a majority of printed material to maximize the success of both male and female students.

Recommendations

Based upon the analysis of data obtained from the study it is recommended that students learning styles be assessed for the benefit of both the student and the teacher. This information can be utilized to create student awareness of their specific learning style and to assist the teacher in curriculum design or instructional strategy.

The results of this study have shown that a student has a preferred perceptual learning style which can be identified through self perception by using the PLSI. It is recommended that the information obtained on perceived perceptual learning styles can be used by the student to bring about awareness of their perceptual learning style. This awareness will give the student an understanding of why they prefer certain learning environments.

In addition, it is recommended that teachers can benefit through the identification of learning styles by using that information to develop curriculum that will better meet the needs of the students in the classroom. This data shows that if teachers at Meridian Technology Center would like to address learning styles in their curriculum they could incorporate teaching visual, interactive, and print learning styles in the classroom. An teacher could use more visual aids, graphs, and charts to reach the visually oriented learners. Interactive learners could be reached through the use of debate and group discussions while an increased amount of reading assignments in books, magazines, and

journals would benefit the print learner. The analysis of data by group should be used to develop learning materials specific to the needs of the students in that group.

It is also recommended that teachers become educated in the area of learning styles and be able to design and present curriculum that can be specific to the various learning styles of their students. This knowledge of learning styles would enable the teacher to emphasize the methods needed to provide the best possible educational environment for the student.

Recommendations for future research are as follows:

1. Expand this research to encompass a larger geographic area and population.
2. Conduct further studies comparing teaching styles to learning styles and analyzing the effects teaching styles has on learning styles in the classroom.
3. Investigate other types of learning styles and research these additional learning styles on adult populations.
4. Conduct further research on curriculum development based upon learning styles, specifically with adult populations in independent classroom settings.

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APPENDIXES

APPENDIX A

PERCEPTUAL LEARNING STYLE INVENTORY

Perceptual Learning Style Inventory

Check below the strategies/techniques through which you think you learn best. You may choose more than one.

1. motion pictures ---------- ☐
2. lecture, information-giving ---------- ☐
3. group discussions ---------- ☐
4. reading assignments ---------- ☐
5. role playing with you as a participant ---------- ☐
6. project construction ---------- ☐
7. odor discrimination activities ---------- ☐
8. television program ---------- ☐
9. audiotapes ---------- ☐
10. participant in panel discussions ---------- ☐
11. written reports ---------- ☐
12. nonverbal/body movements ---------- ☐
13. drawing, painting, or sculpturing ---------- ☐
14. tasting ---------- ☐
15. slides ---------- ☐
16. records ---------- ☐
17. question-answer sessions ---------- ☐
18. independent reading ---------- ☐
19. physical motion activities ---------- ☐
20. model building ---------- ☐
21. scented materials (such as scratch and sniff) ---------- ☐
22. graphs, tables, and charts ---------- ☐
23. recitations by others ---------- ☐
24. interviews ---------- ☐
25. writing ---------- ☐
26. participant in physical games ---------- ☐
27. touching objects ---------- ☐
28. photographs ---------- ☐

Please fill out the following personal information.

What is your age?
_____ 20-30
_____ 31-40
_____ 41-50
_____ greater than 50

What level of education have you completed?

_____ High School
_____ Vocational Program
_____ Two Year Degree Program
_____ Four Year Degree Program
_____ Graduate School

What is your gender? _____ Male _____ Female

What program are you enrolled in at Meridian Technology Center?

_____ Air Conditioning and Refrigeration
_____ Auto Body
_____ Auto/Diesel Technology
_____ Business Training Center
_____ Commercial Food Production
_____ Cosmetology
_____ Drafting
_____ Health Science Technology
_____ Industrial Technology
_____ Machine Tool
_____ Masonry
_____ Practical Nursing
_____ Radiologic Technology
_____ Residential and Commercial Construction
_____ Welding Technology

Please submit this completed questionnaire to your instructor. The results of this study will be provided upon request. ***THANK YOU*** for your participation!

APPENDIX B

SURVEY COVER LETTER

September 29, 1997

Dear Meridian Technology Center Student:

SUBJECT: Perceptual Learning Style Inventory

This questionnaire is designed to gather information on perceptual learning styles. Learning styles are the way we relate to or interact with our environment for the purpose of learning. Perceptual learning styles elements are print, aural, interactive, visual, haptic, kinesthetic, and olfactory. The population of this study are adult students currently enrolled in programs at Meridian Technology Center.

This study is part of a research project for graduate studies as well as Meridian Technology Center. Your response can help us in determining the perceptual learning styles of students in various programs which will also be of assistance to instructors in curriculum planning.

The questionnaire will take approximately five minutes to complete. Your response will be strictly confidential. Due to the importance of this study, please return the questionnaire to your instructor upon completion.

If you would like to know the results of this study please notify your instructor and the results will be provided. Any questions you may have can be directed to the Institutional Review, Oklahoma State University, (405) 744-5700 or myself at (405) 377-3333 x301.

Your assistance is completely voluntary and at no time will your identity be revealed. Thank you for your participation.

Sincerely,

Lawanta Ramsey

Lawanta Ramsey, Instructor
Evening Business Training Center

Enclosure

APPENDIX C

INSTRUCTOR COVER LETTER

interoffice

MEMORANDUM

date: September 29, 1997

to: Instructor's Name

from: Lawanta Ramsey LR

subject: Survey

Attached is a cover letter and survey that has been prepared for adult students (18 years of age or older) currently enrolled at Meridian Technology Center. The data from this survey will be analyzed and included in my thesis entitled "Perceptual Learning Styles of Adult Students at Meridian Technology Center". This survey has been approved by our administration to conduct during class. I would appreciate your help in administering this survey to all adults in your program.

The survey should only take about five minutes to complete. Please inform your students of the following:

* participation is completely voluntary and risk-free
* they can contact me if they would like the results of the survey
* the survey needs to be completely filled out
* responses will be anonymous and confidential so it is important names are not placed on the survey.

When the student has completed the survey please have them place the survey in the envelope enclosed. Once all surveys have been placed in the envelope the instructor can then seal the envelope and place it in my mail box in the mail room. Please have all surveys returned to me by October 10, 1997.

Thank you for your help! I really appreciate you taking part of your class time to help yet another graduate student fulfill their goals. If you have any questions give me a call.

lr

Enclosures

APPENDIX D

E-MAIL REMINDER TO INSTRUCTORS

From: Lawanta Ramsey (301)
To: INSTRUCTORS
Date: 10/8/97 2:12pm
Subject: Survey

This is just a reminder that the Learning Style Inventory I sent to you September 29 is due back to me this Friday, October 10. Thank you all for responding so quickly. I should have the results by November 7 if you are interested. Thanks again for your help!!

APPENDIX E

PLSI SCORING SHEET

PLSI - Scoring Sheet

Strategy Numbers	Style
1. 1, 8, 15, 22, 28	Visual
2. 2, 9, 16, 23	Aural
3. 3, 10, 17, 24	Interactive
4. 4, 11, 18, 25	Print
5. 5, 12, 19, 26	Kinesthetic
6. 6, 13, 20, 27	Haptic
7. 7, 14, 21	Olfactory

1. _____	15. _____
2. _____	16. _____
3. _____	17. _____
4. _____	18. _____
5. _____	19. _____
6. _____	20. _____
7. _____	21. _____
8. _____	22. _____
9. _____	23. _____
10. _____	24. _____
11. _____	25. _____
12. _____	26. _____
13. _____	27. _____
14. _____	28. _____

APPENDIX F

PERMISSION TO USE PLSI

From: Michael W. Galbraith <galbrait@fau.edu>
To: Lawanta Ramsey 301 <lawantar@mail.meridian-techno...
Date: 9/18/97 9:45am
Subject: Re: PLSI

Lawanta- thank you for the email. You certainly can use the inventory instrument. Good luck. Waynne and I have never tested for reliability or validity on it so that raises a big question for you however, I can say that over the years many folks have used it and found it to "hit the mark" about them. Have fun and good luck on your thesis. Say Hi to Ray for me. If you have any more questions please feel free to call upon me. Michael

At 03:18 PM 9/16/97 -0600, you wrote:
>Dr. Galbraith:
>
>I am a graduate student at Oklahoma State University completing my
>thesis on "Perceptual Learning Styles of Adult Students at Meridian
>Technology Center". In my research I located the Perceptual Learning
>Style Inventory you and Wayne James developed in 1984. I would like
>your permission to use this instrument for my thesis. Do you have any
>information regarding reliability or validity of the PLSI? I have not yet
>completed by library research and if you have any further information or
>suggestions they would be appreciated.
>
>My Master's degree will be in Occupational and Adult Education and my
>thesis advisor is Dr. Ray Sanders (he says hello). I hope you will
>consider my request and let me know your decision. Thanks! >
>

APPENDIX G

IRB FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 09-26-97 **IRB#:** ED-98-019

Proposal Title: PERCEPTUAL LEARNING STYLES OF ADULT STUDENTS AT MERIDIAN TECHNOLOGY CENTER

Principal Investigator(s): Ray E. Sanders, Lawanta Ramsey

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE APPROVAL PERIOD.
APPROVAL STATUS PERIOD VALID FOR DATA COLLECTION FOR A ONE CALENDAR YEAR PERIOD AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Disapproval are as follows:

Signature: John H. Wyckoff

Chair of Institutional Review Board

Date: September 26, 1997

cc: Lawanta Ramsey

VITA

Lawanta M. Ramsey

Candidate for the Degree of

Master of Science

Thesis: PERCEPTUAL LEARNING STYLES OF ADULT STUDENTS AT MERIDIAN TECHNOLOGY CENTER

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in Jones, Oklahoma, May 2, 1962, the daughter of Ernestine Lavon Butler and John Lavoy Bottger.

Education: Graduated from Agra High School, Agra, Oklahoma, in May, 1980; received Bachelor of Science Degree in Business Administration with Teacher Certification from Oklahoma State University in December, 1991; completed requirements for the Master of Science degree at Oklahoma State University in December, 1997.

Professional Experience: Secretary/Administrative Associate, Oklahoma State University, September, 1982 - July, 1996. Instructor, Meridian Technology Center, August, 1996 to present.