An Exploratory Study of Alabama Real Estate Instructors' Learning Styles

by

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Abstract

The purpose of this study was to examine the learning styles of Alabama real estate instructors. Real estate instructors are approved or licensed by the Alabama Real Estate Commission. Real estate instructors are called upon to deliver quality instruction to those seeking to obtain a real estate license in Alabama and to those who are licensed as they seek to meet licensure requirements and gain knowledge in the profession.

Real estate educators in Alabama are adult educators and thus, the concept of andragogy should be the focus of planning curriculum and teaching methods in the real estate courses. As part of this planning, instructors should become aware of the concept of learning styles and how learning styles affect student outcomes. This study was undertaken, in part, to make Alabama real estate instructors aware of learning styles and as they saw how their personal learning styles affected them, to examine how they might plan and teach better by taking into account the learning styles of their students.

The Index of Learning Styles was used as the survey instrument for this study. The results of this study will be used by the Alabama Real Estate Commission to bring greater awareness to its instructors of learning styles and ultimately, to improve the quality of real estate education in Alabama.

Acknowledgements

While this has been a long journey, it has been one in which I have learned much about the field of adult education, real estate education, and about myself. I am indebted to Dr. Maria Witte and Dr. Jim Witte for first encouraging me to pursue a higher degree and then for their patience and assistance through this process. I also appreciate Dr. David DiRamio and Dr. Ellen Reames for serving on my committee. Special thanks to Dr. David Martin for serving as the university reader.

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I am thankful for my family. This final part of the dissertation process is dedicated to my father, David Sr., who passed away in June 2017. I am thankful for my Mom, Mazie, my sister, Melissa, my brother and sister-in-law, Al and Lisa, and my niece and nephew and their spouses, Elise and Brian Hinton and Brit and Jesse Bowen. The encouragement and support of family has been so important.

Finally, I am thankful for the sustenance of my faith. Times have often been hard and I was ready to give up, but prayer got me through.

Table of Contents

List of Tables

CHAPTER I

INTRODUCTION

The Alabama Real Estate Commission (Commission) is charged with the licensing and regulation of real estate licenses within the State of Alabama. A major part of its mission is to see that quality education is provided to those that seek or hold a real estate license. This education comes first in the form of a sixty-hour salesperson prelicense course, then a thirty-hour post license course, and in some cases is later followed by a sixty-hour broker prelicense course. Separate courses are also available for out-of-state licensees who wish to obtain an Alabama real estate license through reciprocity. Additionally, licensees are required to complete fifteen hours of continuing education during every two-year renewal cycle (Alabama Real Estate License Law, 2015).

The Commission's education division is responsible for approving or licensing instructors to teach real estate courses that are approved by the Commission. The education division develops standards for the approval or licensing of real estate instructors. The education division also approves the curriculum for all of the courses that are taught for credit. To follow up on the quality of the education being presented by Alabama real estate instructors, the education division sends education auditors to real estate classes to critique both the instructor and the course content. The education division strives for quality education. If instructors gain a greater understanding of learning styles including their own, the Commission believes that this will lead to

instructors taking students' learning styles into account when developing course curriculum and planning teaching methods. This, in turn, should lead to a higher quality of education. It is also important that instructors have a clear understanding of adult education.

Real estate licensees in the State of Alabama must be at least 19 years old so Alabama real estate instructors are not dealing with children or teenagers in their classes but rather are dealing with adult learners (Alabama Real Estate License Law, 2015).

Adult education has been defined in many different ways. Essert (1951) defined adult education as "an experience of maturing, voluntarily selected by people whose major occupation is no longer that of going to school or college, in which those individuals or groups plan meaningful tasks and apply sustained inquiry to them. The major portion of adult education is engaged in helping people meet their individual needs as they are interpreted by individuals themselves" (p. 5). Houle (1972) defined adult education as being "a cooperative art designed to increase skill, knowledge, or sensitiveness" (p. 207). According to Darkenwald and Merriam (1982), the adult education field is "a process whereby persons whose major social roles are characteristic of adult status undertake systematic and sustained learning activities for the purpose of bringing about changes in knowledge, attitudes, values, or skills" (p. 9).

There are many different reasons as to why adults choose to learn. According to Apps (1992), one of the major reasons that adults will enroll in education is to learn a new skill in order to advance in their workplace. Houle (1961) described the adult learner as wanting to learn because of one of three orientations: (1) goal orientation seeks learning to achieve a specific goal; (2) activity orientation seeks learning for involvement

in an activity; (3) learning orientation seeks learning for the sake of learning. Most students in the Alabama real estate salesperson prelicense course are there because they wish to acquire a new skill in a new profession. From that point on, licensees are in courses in part because of requirements of Alabama License Law but they are also in courses in order to become better at their profession and achieve their personal goals.

Adult learners have a different learning orientation than that of children and teenagers. The method of teaching that is most appropriate for non-adults is called pedagogy. In this type of environment, the learning is teacher-directed and it is the teacher that is solely responsible for what, when, and how students learn. According to Knowles (1973), andragogy is defined as the art and science of helping adults learn. Knowles (1973) believed andragogy was based on five major assumptions:

1. Adult learners need to know the reasons for learning specific information before they begin to learn.
2. Adult learners are seen as adults once their self-concept moves from a level of dependence towards a level of self-directedness.
3. As an individual grows, they develop an increasing volume and quality of experience. This experience is used as a resource for new learning.
4. Adults become more ready and willing to learn when the learning is related to their social role.
5. Adults are motivated to learn if they feel that learning the information will help them perform tasks in their everyday situations.

All adult educators including real estate instructors are being constantly challenged to discover new and different teaching approaches that encompass a variety of

learning styles and meet the needs of adult learners, enhance learning, and facilitate and motivate active participation. Knowles (1984) noted that adults will learn in almost any situation, regardless of the effectiveness of their teachers. But if learning and the learning style fit the needs of the adult learner, the learning will be much more effective. There are some individuals that learn by seeing and hearing. There are other individuals that learn by watching and doing. There are other individuals that learn by visualizing while others learn by implementing. Felder and Silverman (1988) believe that students learn in a number of ways – "by seeing and hearing; reflecting and acting; reasoning logically and intuitively; memorizing and visualizing and drawing analogies" (p. 674). Curry (1983) referred to learning as learning that was intentional as against unintentional learning, where intended learning is considered as a process and also as a product. It is a process because intended learning is adaptive, focuses on the future, and affects "an individual's cognitive, affective, social and moral volitional skills" (p. 2).

Cassidy (2004) believed that the one concept that has offered insights into learning is learning style. The different styles that people use to learn were termed as learning styles. James and Blank (1993) stated that "The ways individual learners react to the overall learning environment and its various elements are often said to make up the learning style" (p. 47). Claxton and Ralston (1978) have identified learning style as "a student's consistent way of responding and using stimuli in the context of learning" (p. 7). Keefe (1987) defined learning styles as "characteristic cognitive, affective, and physiological traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (p.5). According to Dunn and

Dunn (1993), “learning style is the way students begin to concentrate on, process, internalize, and remember new and difficult academic information” (p. 8).

Sarasin (1999) described learning styles as “basically the preference or predisposition of an individual to perceive and process information in a particular way or combination of ways” (p. 3). Curry (1983) used the term learning style to refer to “the general area of interest concerning individual differences in cognitive approach and process of learning” (p. 3). James and Blank (1993) defined learning style as the “complex manner in which, and conditions under which, learners most efficiently and most effectively perceive, process, store, and recall what they are attempting to learn” (p. 47). According to Toye (1989), learning styles “attempt to explain learning variation between individuals in the way they approach learning tasks” (p. 226). Curry (1991) mentioned that a learning style could be considered as a mixture of an individual’s motivation to learn, engagement in the learning process and processing habits of the content cognitively. Kolb (1984) indicated that one’s learning style is an individual’s preference of methods to perceive and process information. Carbo, Dunn and Dunn (1986), stated that “learning style is the way students begin to concentrate on, process, internalize, and remember new and difficult academic information” (p. 8).

Baldwin and Sabry (2003) indicated that “learners are different and approach learning tasks differently and that individual differences can significantly affect an individual’s learning processes” (p. 325). Heffler (2001) believed that “it is advantageous to know your own learning style when approaching a new learning situation to optimize the outcome” (p. 308). A study by Hendry et. al. (2005) revealed that students who expressed greater self-awareness of their personal learning and learning styles showed

acceptance of others' learning styles. Hendry et. al (2005) added that "self-awareness of their learning styles would lead to increased confidence in using their study strategies" (p. 397).

McLachlan (2006) stated that individual students are driven by different things and that "student learning styles and learning drivers may vary from individual to individual" (p. 1). Guild (2001) mentioned that "learners bring their own individual approach, talents and interests to the learning situation" (p. 1). Heffler (2001) believed that individual's learning style has its strengths and weaknesses based on what has to be learned and how it should be learned.

As researchers through the years have found differences in the way individuals learn, a need has arisen to address individual learning styles and to integrate activities to match teaching styles to the learning styles has become an important role for educators. Hall and Moseley (2005) expressed that course designers and instructors should be attentive to the learning styles of students by investigating their learning styles and encouraging them to think and reflect on their own learning styles. Cassidy (2004) stated that "learning style has the focus of a vast number of research and practitioner-based studies in the area, there exist a variety of definitions, theoretical positions, models, interpretations and measures of the construct" (p. 420). Bacon (2004) argued that "although there is an enormous amount of published research on learning styles, relatively few studies have critically evaluated the assumption that learning style affects learning outcomes" (p. 206).

According to James and Blank (1993), there have been a large number of learning styles identification instruments that have been developed for use by educational

professionals and practitioners. Some of the instruments are quite costly and complex and may require that those scoring the instrument have special training. Other instruments are self-administered and are inexpensive to score and can be self-administered and self-scored. Bonham's (1988) review of learning styles instruments suggested that due to their being so many there are reservations concerning the appropriateness of some of the instruments. According to Hiemstra & Sisco (1990), the most appropriate use of a learning style instrument might be to "create awareness that learners differ and used as a starting point for individual learners' continued investigation of themselves as learners" (p. 240). According to Stratman et al. (2008), educators can enhance learning by being aware of the learning styles preferred by students. DeTure (2004) noted that there are many ways to learn and the most important fact to acknowledge is that not all students view learning in the same manner. Students may need to use all of the learning styles to obtain the knowledge they need. Being aware of students' learning styles increases the effectiveness of the education process.

The Index of Learning Styles is a self-administered, online survey instrument that is used to assess an individual's preference on four dimensions (active/reflective, sensing/intuitive, visual/verbal, and sequential/global) of a learning style. The instrument was developed and validated by Richard Felder and Barbara Solomon based on a learning style model formulated by Richard Felder and Linda Silverman. There are 44 *a-b* questions on the survey and as soon as the survey is submitted results are available to be read and printed out. Due to the relative ease of taking the survey and the fact that the survey is free through the graciousness of Richard Felder, the Index of Learning Styles is an ideal survey instrument for this research study.

Statement of the Problem

It is important to examine and understand the learning style differences among students in all types of learning environments because research is lacking in this field. A persistent issue especially in adult education is the understanding and application of a student's unique learning styles. Teachers, instructors, adult educators, program and training developers, and course designers will all benefit from an awareness of student's learning styles in order to develop a curriculum that will address each student's individual learning needs. The Alabama Real Estate Commission is constantly striving to improve real estate education in Alabama. One of the tools that can assist real estate instructors in developing better curriculum and instruction is understanding the unique learning styles of each of the students. According to Baldwin and Sabry (2003), "research continues to build a strong case for the impact of learning styles in better understanding how learners learn and thus how to support them in their task" (p. 329).

Purpose of the Study

The purpose of this study was to examine the relationship among real estate instructors' learning styles from instructors approved or licensed by the Alabama Real Estate Commission as measured by the Index of Learning Styles – active/reflective, sensing/intuitive, visual/verbal and sequential/global. Alabama Real Estate Commission instructors are either approved in a category as Continuing Education Instructors, or licensed in as category as Prelicense/Post License Instructors. The examination also included gender, age, license type, real estate experience, teaching experience, and formal education.

According to Baldwin and Sabry (2003), "the purpose of examining the learning styles of learners is to better understand the behavior patterns that learners exhibit so that

they can be incorporated into interactive learning systems and thus be more effective and efficient in helping learners to learn" (p. 327). Griggs (1985) stated that "increased research studies demonstrates the importance of accommodating individual learning style preferences in the learning process" (p. 202). Cuthbert (2005) believed that " knowledge of the student's learning styles could be important to the teacher since it allows him/her to adjust his/her pedagogic strategies" (p. 246).

Adult education should strive not only to teach subject areas to students, in this case real estate, but it should also build skills in their preferred modes so that students learn to adapt to situations. Felder (2005) stated, "when mismatches exist between learning styles of most students in a class and the teaching style of the professor, the students may become bored and inattentive in class, do poorly on tests, get discouraged about the courses, the curriculum, and themselves, and in some cases change to other curricula or drop out of school" (para. 2).

Research Questions

This study was guided by the following two research questions:

1. What are the relationships among real estate instructors' learning styles from instructors approved or licensed by the Alabama Real Estate Commission as measured by the Index of Learning Styles?
2. What are the relationships among real estate instructors' learning styles from instructors approved or licensed by the Alabama Real Estate Commission, as measured by the Index of Learning Styles, based on gender, age, license type, real estate experience, teaching experience, and formal education?

Significance of the Study

Real estate instructors, other adult educators, teachers, instructors, trainers, course designers, and program and training developers are responsible for creating and developing a successful learning environment where students' individual learning styles are addressed in order to enhance learning. The results of this study will aid the Alabama Real Estate Commission's education department in designing training for real estate instructors that will, in turn, aid real estate instructors in addressing individual learning styles differences and designing appropriate curriculum for an effective learning experience. An awareness and understanding of learning styles and strategies and their associated strengths and weaknesses may enable individuals to lead with their learning style while developing their weaknesses (Bouldin & Myers, 2002).

Bajraktarevic, Hall, and Fullick (2003) stated that "students benefit from the learning materials being adapted to suit their learning preferences. The results revealed that students have obvious different preferences for lesson presentation type" (p. 8). Graf, Viola, Leo, and Kinshuk (2007) believed that " incorporating learning styles in teaching plans may make learning easier and leads to better achievement" (p. 79). Curry (1990, 1991) indicated that the key purpose to study and apply learning styles was to develop an instant and long-standing outcome of general learning and teaching processes. Merriam and Caffarella (1999) stated that "learning style inventories have proved useful in helping both learners and instructors alike become aware of their personal learning styles and their strengths and weaknesses as learners and teachers" (p. 210). Felder and Silverman (1988) suggested that including a small number of activities or techniques in the

instruction by the instructors would address or meet the needs of several students with a variety of learning styles.

Assumptions of the Study

The following assumptions were made for the purpose of this study:

1. The Index of Learning Styles is a valid instrument to examine the learning styles among real estate instructors that are approved or licensed by the Alabama Real Estate Commission.
2. The participants responded honestly to the survey questions.
3. Only Alabama real estate instructors responded to the study.

Limitations of the Study

This study has several limitations.

First, there was less than full participation in the study. While the Alabama Real Estate Commission had the statutory authority to require all real estate instructors to participate in the study, ethical considerations dictated that the study would be voluntary. Due to this fact, 102 persons participated in the study out of approximately 350 persons who were eligible to participate. It would not be appropriate to generalize the findings to adult education students in other fields.

Second, the study was conducted with only instructors approved or licensed by the Alabama Real Estate Commission. Real estate instructors approved or licensed by other states were not included in the research and thus, it would not be appropriate to generalize the findings to real estate instructors outside of Alabama.

Third, Felder and Solomon (1999, para. 3), the developers of the Index of Learning Styles, made the following observations:

1. The ILS results provide an indication of an individual's learning preferences and an even better indication of the preference profile of a group of students but they should not be over-interpreted.

2. A student's learning style profile provides an indication of possible strengths and possible tendencies or habits that might lead to difficulty in academic settings. The profile does not reflect a student's suitability or unsuitability for a particular subject, discipline, or profession. Labeling students in this way is at best misleading, and can be destructive if the student uses the label as justification for a major shift in curriculum or career goals.

Definition of Terms

The following terms used with specific definitions were important for this study:

1. Active learning style – Felder and Soloman (n.d., para. 1) described active learners as those who understand and retain information through an active role in the educational process. This type of learner prefers to apply the content through discussion, application, or explaining it to others.

2. Alabama Real Estate Commission – an agency of the State of Alabama established to license and regulate the real estate industry in Alabama.

3. Approved instructor – synonymous with Continuing Education Instructor.

4. Continuing Education Instructor – an instructor approved by the Alabama Real Estate Commission who is limited to teaching only continuing education courses.

5. Global learning style – Felder and Soloman (n.d., para. 11) global learners learn in large jumps while absorbing material almost randomly without seeing any initial connection. Global learners tend to be complex problem solvers and often

perceive other connections related to the aspects of the big picture that other learners might not make.

6. Index of Learning Styles – a 44-question self-report instrument created by Felder and Soloman (n.d.) to measure learning preferences of engineering students, initially. The instrument has been used in identifying learning preferences in adult students with over one million adult learners taking the instrument in its online format.

7. Intuitive learning style – Felder and Soloman (n.d., para. 5) describe these learners as those who like to connect the dots since they prefer to discover possibilities and relationships. Intuitive learners are the innovators and often work at a fast pace. This type of learner has a disdain of repetition and enjoys grasping new ideas or theories.

8. Learning preferences – the tendencies exhibited by a learner on an assessment to determine the learning preferences of the student. This particular study used the Index of Learning Styles instrument (Felder and Soloman, n.d.) that examined the eight learning preferences dimensions that are classified as inverse or mirrored pairs.

9. Learning styles – James and Blank (1993) define learning styles as "the complex manner in which, and conditions under which, learners most efficiently and most effectively perceive, process, store and recall what they are attempting to learn" (p. 47).

10. Licensed instructor – synonymous with Prelicense/Post License Instructor.

11. Prelicense/Post License Instructor – an instructor licensed by the Alabama Real Estate Commission who may teach any type of course – prelicense, post license, and continuing education.

12. Reflective learning style – Felder and Soloman (n.d. para. 1) described reflective learners as those who need time to think and absorb new learning material and often this reflection period is difficult in fast-paced classes. The reflective learner prefers to think about things before applying application.

13. Sensing learning style – Felder and Soloman (n.d., para. 5) describe sensing learners as those who tend to like learning facts and often enjoy solving problems by well-established methods. The sensing learner dislikes any unexpected complications or testing on subject matter that was not adequately covered in class. The sensing learner generally prefers that the content be grounded.

14. Sequential learning style – Felder and Soloman (n.d., para. 11) describe sequential learners as those who gain understanding in logical, linear steps. Sequential learners do their best when instruction is delivered in small stages.

15. Verbal learning style – Felder and Soloman (n.d. para. 9) describe verbal learners as those that prefer information be disseminated through the spoken word. This learner does well in oral presentations and demonstrations involving lecture or discussion.

16. Visual learning style – Felder and Soloman (n.d., para. 9) describe visual learners as those who remember best by what they see in diagrams, pictures, time lines, films, demonstrations and flow charts. The highest majority of learners are visual learners.

Organization of the Study

This chapter provided an introduction to the research study. It addressed the statement of the problem, the purpose of the study, research questions, significance of the study, limitations of the study, and the definitions of key terms used in this study. Chapter II provides a review of the related literature for this study. It addresses the major theories of learning, adult education, previous research on learning styles, learning styles models, and the Index of Learning Styles survey.

Chapter III describes the methods that were used in this study. It includes the design of the study, research questions, variables – the independent and dependent variables, the instrument used – Index of Learning Styles, the reliability and validity of the Index of Learning Styles, population sample, data collection, procedure and analysis, results and a summary. Chapter IV presents the finding of this study and describes the participants' demographic characteristics and the analytical and statistical procedures. Chapter V summarizes the findings of the study and includes ideas for future research.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The first chapter described the statement of the problem, the purpose, research questions, significance of the study, assumptions of the study, limitations of the study, definition of terms, and organization of the study.

The second chapter – literature review – discusses the Alabama Real Estate Commission – its structure, its educational component, and its mandated instructional methods. Learning theory is discussed next with emphasis on behavioral, cognitive, humanist, and social learning theory. The overall field of adult education is discussed with specific attention paid to andragogy. Learning styles are then discussed with the final section specifically reviewing the Index of Learning Styles.

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measured by the Index of Learning Styles, based on gender, age, license type, real estate experience, teaching experience, and formal education?

Alabama Real Estate Education

The Alabama Real Estate Commission is responsible for the licensing and regulation of real estate licenses in the state of Alabama. A major component of the licensing and regulation process has to do with education requirements. The Commission sets requirements for education needed to obtain a temporary license, for education to obtain an original license, for education to obtain a broker license, for education to obtain a license through reciprocity and for continuing education for the renewal cycle. Approximately, 28,000 individuals hold Alabama real estate licenses. The majority of those are made up of salespersons – approximately 19,000 – while the remainder are held by brokers – approximately 9,000.

The Commission

The Alabama Real Estate Commission is a state agency that was established in 1927 by Legislative Act 1927, No. 344. There are nine Commissioners that are appointed by the Governor and confirmed by the State Senate. Eight of the members must be real estate salespersons or brokers for ten years prior to their appointment. One member comes from each of the seven congressional districts. One member is an African-American member and this seat is rotated among the congressional districts. One member is a consumer member that does not hold a real estate license. Members serve five-year staggered terms, with no member being eligible for not more than two successive terms. Commissioners are responsible for hiring an Executive Director and an Assistant Executive Director (Alabama Real Estate License Law, 2015). There are seven divisions with the Commission: executive, accounting and personnel, education, licensing, public

relations, information technology, and legal & investigative. All employees of the Commission except for the Executive Director and Assistant Executive Director are merit system employees and their hiring is processed through the State Personnel Department.

Education Requirements

Alabama License Law requires that in order to qualify to take the real estate exam, applicants must complete a sixty-hour salesperson prelicense course. The course is made available in the classroom and through distance education (online). The Commission approves the outline of the course but the specifics of the instruction are left to the individual instructors. After successfully completing the salesperson prelicense course and passing the state exam, a Temporary License is issued. Once a Temporary License is obtained the licensee is required to take a thirty-hour post license course. The course is available in the classroom and through distance education. The curriculum for the course is prescribed by the Commission although how it is taught is left to the discretion of the instructor.

After meeting certain licensure requirements, salespersons have the opportunity, if they choose, to obtain a broker license. Before taking the broker exam, licensees must take a sixty-hour broker prelicense course. The broker prelicense course is offered in the classroom and through distance education. The Commission also has a six-hour education requirement for those that have a real estate license in another state and wish to obtain an Alabama license through reciprocity. Finally, for license renewal every two years, the Commission requires licensees to complete fifteen hours of continuing education. The Commission requires that licensees take six hours of risk management training and nine

hours of electives. All of the courses require that the curriculum be approved by the Commission.

All of the courses – salesperson prelicense, post license, broker prelicense, reciprocal courses, and continuing education – must be taught by instructors approved by the Commission and must be taught through schools approved or licensed by the Commission.

Instructor Types

The Commission allows two types of instructors to teach real estate courses. The Continuing Education Instructor may teach only continuing education courses. Approval is based on education and experience and it is not required that the applicant have a real estate license. The second type of instructor is the Prelicense/Post License Instructor. This type of instructor may teach continuing education courses, salesperson prelicense, post license, reciprocal courses, and broker prelicense. Applicants must hold a broker license from any state and their approval is based on a point system that gives points for active real estate experience, formal education, real estate education, and teaching experience. Prelicense/Post License Instructors must attend a two-day new instructor orientation at the Commission office once approved. Prelicense/Post License Instructors are required to complete 12 hours of instructor training over and above the hours needed to renew their broker license every two years and are encouraged to attend additional trainings throughout the period. The majority of the training is conducted by out-of-state prominent real estate instructors although some training is conducted by the Commission staff. Although the number of instructors fluctuates between renewal periods, there are

approximately 200 instructors in the Continuing Education Instructor category and 150 Prelicense/Post License Instructors.

Instructional Methods

Online courses must be certified through the International Distance Education Certification Center (IDECC). IDECC is a program of the Association of Real Estate License Law Officials (ARELLO). Real estate instructors are given guidance on the instructional methods that they should use in the classroom but no particular methods are mandated. All instructors are asked to follow the Generally Accepted Principles of Education (GAPE) as adopted by the Real Estate Educators Association (REEA). GAPE (REEA, 2016) is divided into five sections: knowledge, andragogy, speech, teaching aids, and learning environment. Each of the sections has specific principles that instructors should adhere to:

Knowledge – Instructors should:

1. Provide current information.
2. Present alternative viewpoints on material when there is not a single position that is accepted industry-wide.
3. Clearly identify opinions as the instructor's opinion.
4. Build a proper foundation for each major element of a subject.
5. Deal with all key elements of a subject.
6. Cover the material adequately in the allotted time.
7. Answer all questions logically and concisely.
8. Be informed enough to handle a variety of questions on the subject being taught.

9. Admit when he/she does not know the answer to a question and volunteer to obtain that information.

Andragogy – Instructors should:

1. Present new ideas by relating them to pre-existing knowledge held by the learners.
2. Teach at the learner's level.
3. Show in a specific way how new material will benefit learners.
4. Encourage questions and motivate involvement.
5. Show tolerance – both to ignorance and disagreement thus avoiding arguments and confrontation.
6. Build learner's self-esteem.
7. Call learners by name.
8. Involve learners in the learning process through planned activities.
9. Use a variety of teaching methods.
10. Teach to all participants, not just those who show interest.
11. Present key points by using examples as illustrations.

Speech – Instructors should:

1. Use concise, simple, and normal speech patterns; use simple terminology.
2. Not read to the class.
3. Keep the presentation on pace thus finishing the material in the allotted time.
4. Keep topic flowing.
5. Speak loudly enough to be heard by all.
6. Enunciate clearly without being overdone.

7. Restate an individual learner's question to the group as a whole prior to attempting to answer the question.

8. Use humor when appropriate to make a point.

Teaching Aids – Instructors should:

1. Make sure materials are legible, correctly spelled, properly numbered and mechanically produced using readable typeface.

2. Use visual imagery when possible to enhance written words.

3. Use written words when possible to enhance oral speech.

4. Follow the prepared outline.

5. Make sure that all material on the outline will be covered in the class and none of it is extraneous.

6. Deviate from prepared material only to meet specific needs.

7. Arrange the classroom so that learners not have to look through physical objects.

8. Use modern presentation equipment such as overhead projector or computer projection.

9. Use equipment that enables the instructor to remain looking at the learners rather than turning their back to the class to write.

10. Make sure that the physical stature of the instructor does not block the view of the learners toward the projected material.

11. Make sure that the projector screen is easily visible to the group as a whole.

12. Use color.

13. Use large images for projected material.

14. Turn the projected image off when not in use and on to call attention to the material.

15. Never block the image by walking between the projector and the screen with the projector on.

Learning Environment – Instructors should:

1. Be positive toward the subject matter.

2. Refrain from ridiculing either the learners or others.

3. Wear professional attire.

4. Attend to personal grooming.

5. Set up the room to accommodate the approximate number of learners expected to attend.

6. Make sure empty seats are kept at a minimum.

7. Make sure that lectern or table at front of room is unobtrusive.

8. Provide writing surfaces for learners.

9. Make sure that learners have ample space between them.

10. Not stand behind physical objects for more than a short time period.

11. Use gestures during the presentation.

12. Use physical movement during the presentation to minimize the physical distance between the instructor and learners and try to involve all learners quickly.

Learning Theory

According to Robotham (2007), in considering how to improve student learning, one will need to understand the ways in which students learn. The learning process can be studied from the points of view of four important learning theories: (1) behavioral, (2) cognitive, (3) humanist, and (4) social learning theory. These theories have served as the foundation for the development of various learning style models that have been used in the development of various learning styles instruments. It is important to recognize the different views of the learning process and to determine how these findings can be utilized to further enhance the learning process of real estate students. A summary of key learning theories follows.

Behavioral Theories of Learning

Behavioral psychology is a branch of science that is devoted to identifying principles of behavior through experimental study. Behavioral learning theory then is the application of those same principles to learning. According to O'Donohue and Kitchener (1999), there are "at least fifteen" types of philosophical and psychological behaviorism (p. 2). Not all of the theories have related to education. Interestingly, behavioral learning theory can be traced all the way back to the time of Aristotle in the years around 350, B.C.E. Aristotle developed three Laws of Association and a Law of Frequency that closely tie to the heart of most behavioral learning theories. As summarized by Olson and Hergenhahn (1982), the laws are (p. 35):

1. Law of Similarity – the experience or recall of one object will elicit the recall of things similar to that object.
2. Law of Contrast – the experience or recall of one object will elicit the recall of opposite things.

3. Law of Contiguity – the experience or recall of one object will elicit the recall of things that were originally experienced along with that object.

4. Law of Frequency – the more frequently two things are experienced together, the more likely it will be that experience or recall of one will stimulate the recall of the second.

Edward Thorndike is recognized as the founder of a learning theory that dominated all others in the United States for nearly half a century (Bower and Hilgard, 1981). Thorndike (1931) laid the foundation for the modern behaviorist theories of learning when he wrote, "As a man lives and learns, his reaction or responses to the same situation or state of affairs changes" (p.4). Thorndike (1931) went on to describe three laws of how humans and animals learn: (1) the law of reward whereby learning is influenced by reward. (2) the law of exercise which describes a connection between a situation and a reward which strengthen with use; and (3) the law of effect which describes a situation and response relationship whereby the relationship is increased with satisfaction and the relationship is decreased when dissatisfaction is present. Thorndike called this relationship connectionism.

Later in his career, Thorndike explored four factors of learning that can be viewed as the beginning of cognitive learning research. These factors have been summarized by Bower and Hilgard (1981) as follows:

1. Belongingness – "a connection between two units or ideas is more readily established if the subject perceives the two as belonging or going together" (p. 35).

2. Associative Polarity – “connections act more easily in the direction in which they were formed than in the opposite direction” (p. 35).

3. Stimulus Identifiability – “a situation is easy to connect to a response to the extent that the situation is identifiable, distinctive, and distinguishable from others in a learning series” (p. 36).

4. Response Availability – “the ease of forming connections is directly proportional to the ease with which the response required by the situation is summoned or executed” (p. 36).

The Russian physiologist, Pavlov (1927), furthered the work that Thorndike had done. Pavlov was awarded the Nobel Prize in medicine in 1904 for his work on the digestive activity in dogs. Pavlov’s work advanced the theory of classical conditioning. Sprinthall and Sprinthall (1930) described Pavlov’s contribution to behaviorist learning theories as coming from “observation that his dogs not only salivated when given food, but when a stimuli occurred before feeding when the dogs heard Pavlov’s footsteps in route to the laboratory” (p. 256).

Olson and Hergenhahn (2009) summarized some of the key concepts that were empirically founded through Pavlov’s experiments:

1. “The process by which a conditioned reflex is developed. To produce a CR (conditioned response), the CS (conditioned stimulus), and the US (unconditioned stimulus) must be paired a number of times. First the CS is presented and then the US. The order of presentation is very important. Each time the US occurs, a UR (unconditioned response) occurs. Eventually, the CS can be presented alone and it

will elicit a response similar to the UR. When this happens, a CR has been demonstrated" (p. 164).

2. Experimental extinction. "If after CR has been developed, the CS is continually presented without US following the CS, the CR gradually disappears" (p. 164).

3. Spontaneous recovery. "After a period of time following extinction, if the CS is again presented to the animal, the CR will temporarily reappear" (p. 165).

4. High-order conditioning. "After a CS has been paired with a US a number of times…it can be paired with a second CS to bring about a CR" (p. 165).

5. Generalization. "Stimuli similar to the CS will also elicit the CR" (p. 166).

6. Discrimination. "Discrimination is the opposite of generalization: generalization refers to the tendency to respond to a number of stimuli that are related to the one actually used during training. Discrimination, on the other hand, refers to the tendency to respond to a very restricted range of stimuli, or to only the one used during training" (p. 167).

Guthrie furthered the work of Thorndike and Pavlov. Guthrie (1960) was primarily interested in the learner's selection of stimuli that would promote a response. According to Grippin and Peters (1984), Guthrie's work brought about a law of learning: "Whatever you do in the presence of stimulus, you do again when the stimulus is re-presented" (p. 61).

Skinner (1974) furthered the work of both Thorndike and Guthrie and advanced behaviorist psychology. Skinner made some changes to the terminology that had been used in the field. Instead of "reward" he used "component reinforcement." Skinner also identified "operant" and "respondent" as two types of responses. Operant is defined as a

learning situation whereas a response was made as the result of immediate reinforcement. The respondent requires no previous learning; the individual simply responds to the environment.

The practice of operant conditioning in the experimental analysis of behavior was based on a set of principles that Skinner (1961a) formulated:

1. Positive reinforcement – a response that is followed by the presentation of a satisfying stimulus tends to be repeated.

2. Negative reinforcement - a response that is followed by the removal of an aversive stimulus tends to be repeated.

3. Punishment – a response that if followed by the presentation of an aversive stimulus becomes less frequent.

4. Reinforcement removal – a response that is followed by the removal of a satisfying stimulus becomes less frequent.

5. Discrimination – discriminations are learned when a behavior is reinforced in the presence of one stimulus but not another, or when a behavior is punished in the presence of one stimulus but not another.

6. Shaping – a new behavior can be learned through the reinforcement of successive approximations to the goal behavior.

7. Chaining – complex behavior can be established by linking together a series of simple behaviors already known to the learner, where the response of each link brings the learner into contact with discriminate stimuli that serve as cues for subsequent responses.

8. Priming – various methods can be used to get a learner to behave in a given way for the first time so that the behavior can be reinforced.

9. Prompting – certain discriminative stimuli may be used to provide a guide to prompt behavior that is to be learned.

10. Vanishing – the concept of vanishing refers to the gradual fading out of discriminative stimuli initially used to prompt a behavior.

Skinner (1971) went on to encourage the application of his work to educational settings for human students. Skinner believed a classroom is the ideal environment to elicit desired behavior and to extinguish undesirable behavior. Knowles (1973) summed up the work of Skinner by saying: "It is from the work of Skinner that current educational technology or programmed instruction and teaching methods derived" (p. 21).

The behaviorist theory of learning was summed up by Grippin and Peters (1984) as consisting of three assumption: (1) learning starts with a change in behavior; (2) the environment shapes behavior, and (3) the learning process is explained by the principles of contiguity and reinforcement.

Cognitive Theories of Learning

In the 1930's, Wertheimer (1945) began to criticize the behaviorists for their devotion to single events and actions and dependence on overt behavior to explain learning. Wertheimer disagreed with the use of repetition and rote memorization that lead to nonproductive learning. Wertheimer's work came from research that became known as Gestalt psychology. Wertheimer believed that teaching should be done differently. He thought that teachers should arrange their material so that their students could see the whole and not just parts that seemed unrelated. The Gestalt view of learning has been

incorporated into the cognitive orientation. Hergenhahn (1988), summed up the relationship of the Gestalt approach to the learning process by saying, “Learning is a cognitive phenomenon” (p. 252).

Three major characteristics that distinguish the cognitive perspective from the behavioral perspective were described by Howard (1983) in the following manner:

1. It emphasizes knowing, rather than responding. The major emphasis is not on stimulus-response bonds, but on mental events (p. 5).

2. It emphasizes mental structure or organization. An individual’s knowledge is organized and new stimuli are interpreted in light of this knowledge (p. 6).

3. It defined a view of the individual as being active, constructive, and planful, rather than as being the passive recipient of environmental stimulation (p. 6).

The Swiss psychologist, Piaget (1966), was heavily influenced by the work of the behaviorists and by the Gestalt approach. Piaget worked to develop the first intelligence test. His work with children and the intelligence test led to the development of the theory of how a child’s thinking gradually shifts from concrete to abstract intellectual functioning. Piaget’s work laid the foundation for his contribution to psychology which was a comprehensive theory of the development of intelligence of the thought process for children. Piaget (2001) intertwined the role of biology with the development of knowledge. In his theory, mental adaptation was a result of how an individual interacted with the environment to gain knowledge. His theory can best be understood as having two major aspects of development: adaptation and cognitive. Piaget (1970) went on to develop maturation periods that occur in the learning process: (1) ages two to seven or eight where the individual begins to represent objects or events that are not at the moment

perceptible to by evoking them through the agency of symbols or differentiated signs; (2) ages seven or eight to eleven or twelve where there is a formation of concrete mental operation linking and dissociation of classes with the sources of classification; and (3) ages eleven or twelve through adolescence there is a new mode of reasoning, one that is no longer limited exclusively to dealing with objects or directly representable realities, but also employs hypotheses (p. 30).

Gagne and Briggs (1979), developed a link between the acquisition and processing of information. They developed eight different types of learning: (1) Signal Learning – the individual learns to make a general, diffuse response to a signal, (2) Stimulus-Response Learning – the learner acquired a precise response to a discriminated stimulus, (3) Chaining – what is acquired is a chain of two or more stimulus-response connections, (4) Verbal Association – verbal association is the learning of chains that are verbal, (5) Multiple Discrimination – the individual learns to make different identifying responses to as many different stimuli, which may resemble each other in physical appearance to a greater or lesser degree, (6) Concept Learning – the learner acquires a capability of making a common response to a class of stimuli that may differ from each other widely in physical appearance, (7) Principle Learning – a principle is a chain of two or more concepts, (8) Problem Solving – problem solving is a kind of learning that requires the internal events usually called thinking.

Gange (1965) also believed there were eight instructional situations that had to be determined by the teacher: "(1) presenting the stimulus, (2) directing attention and other learning activities, (3) providing a model for terminal performance, (4) furnishing

external prompts, (5) guiding the direction of thinking, (6) inducing transfer of knowledge, (7) assessing learning attainment, (8) providing feedback" (p. 268).

Vygotsky (1978) emphasized the critical importance of cultural and social context for cognitive development. He believed that social interaction was the basis for all learning and development. Vygotsky (1978) believed that studying the process of learning in the environment where learning is taking place, rather than the product, effectively embraced Piaget's theory that learning is adaptive and can be either assimilated or accommodated.

Smith (1982) examined the concept of how one learns and had six observations about the learner and the learning process: "(1) learning is a natural process; (2) learning has its intuitive side, (3) a critical characteristic of adult learners is an accumulation of experience, (4) a critical characteristic of adult learners is a special development trend, (5) a critical characteristic of adult learners is anxiety, and (6) a critical characteristic of adult learners is ambivalence" (p. 38).

Humanist Theories of Learning

Humanist theories put emphasis on an individual's control over his destiny and define the learning process as a desire for personal growth. Maslow (1968) described learning as an individual's goal for self-actualization using their talents, capacities and potentialities. Sahakian (1984) noted that while Maslow (1970) stressed self-actualization as the ultimate goal, learners actually strive for other goals: "(1) the discovery of a vocation or destiny, (2) the knowledge or acquisition of a set of values, (3) the realization of life as precious, (4) the acquisition of peak experiences, (5) a sense of accomplishment, (6) the satisfaction of psychological needs, (7) the refreshing of

consciousness to an awareness of the beauty and wonder of life, (8) the control of impulses, (9) the grappling with the critical existential problem of life, and (10) learning to choose judiciously" (p. 438).

Rogers (1983) through his work in client-centered counseling came to the belief that what was true for psychotherapy could be applied to counseling and teaching. Rogers (1951) prescribed three necessary conditions for the process of learning: (1) empathy would be the ability to accurately read a student's challenge, (2) unconditional positive regard and acceptance of students for what they are without passing judgement, and (3) congruence would stress the development of a warm human relationship between teacher and student. Rogers made the assumption that human beings have a natural desire to learn. He also identified that students learn best when the learning is personally significant. His third assumption was that learning is quickly retained when an environment is free from threat. Rogers' final assumption was that yesterday's style of learning is not adequate for today's environment.

Rogers (1983) believed that traditional learning is impersonal and that we learn only what is important and relevant to us. He stated that while empathy and understanding should be used in the traditional classroom, in reality, it seldom is. For teachers to be successful in the classroom, Rogers believed that teachers needed certain qualities: (1) the ability to become a facilitator of learning, (2) the teacher would serve as a guide and model to help students to decide how they will learn, and (3) the teacher needs to serve as a guide to help students decide how they will learn. Teachers needs to be real and genuine and should trust a student's potentiality for self-improvement, and (4)

teachers need to be emphatic and understanding in the ability to see the world through the student's eyes.

Social Learning Theories

According to Knowles (1973), "The most elaborate system of thought on imitation, identification or modeling as concepts of teaching has been developed by Bandura. He labeled the social cognitive system social learning" (p. 79). Social learning theories can be defined as opportunities for learners to engage in the overall learning process by observing and then modeling behavior in social situations (Dembo, 1994). Bandura (1969) organized three categories of modeling behavior: (1) the inhibitory-disinhibitory effect encourages responses to be less frequent because of undesirable consequences, (2) the eliciting effect occurs by facilitating a response repertoire in the observer, and (3) the modeling effect determines new responses through the observation of a model. New behavior can result from observing the behavior of parents, siblings, or peers.

Bandura (1976) believed that "Virtually all learning phenomena resulting from direct experiences can occur on a vicarious basis through observation of other people's behavior to some extent by visualizing self-generated consequences" (p. 392). Bandura (1977) identified four elements of observation learning: (1) the learner must attend to and perceive a model's behavior, (2) observed behavior is presented in memory by visual images and verbal coding, (3) motorically reproduce or match observed actions, and (4) be motivated to perform the observed behavior.

Rotter (1966) believed that learners will strive for success when they believe they are responsible for the success they achieve rather than luck or chance. Rotter used the

term locus of control where social situations in learning are concerned. He stated there were two dimensions: (1) external locus of control is described as a learner that perceives having little control over fate, and (2) internal locus of control describes a learner that understands effort and reward are correlated.

Bandura (1969) made the following observations: "(1) the selection of a well-defined set of objectives is an essential aspect of any self-directed program of change, (2) the goals that individuals choose for themselves must be specified in sufficiently detailed behavioral terms to provide adequate guidance for the action that must be taken daily to attain desired outcomes, (3) to further increase goal commitment participants are asked to make contractual agreements to practice self-controlling behaviors in their daily activities, (4) under conditions where individuals voluntarily commit themselves to given courses of action, subsequent tendencies to deviate are likely to be counteracted by negative self-evaluations, (5) self-control measures usually produce immediate unpleasant effects while the personal benefits are considerable delayed, and (6) self-reinforcing operations are employed to provide immediate support for self-controlling behavior until the benefits that eventually accrue take over the reinforcing function" (p. 254).

Adult Education

Ausburn (2004) described adult learners as those who have distinctive needs and expectations of learning which sets them apart from younger learners. According to Mackeracher (1996), adult learning is a dynamic and interconnected set of processes that are emotional, social, physical, cognitive, and spiritual. The adult learner has a need to know about educational training or development to aid them in self-directed goals so that optimum learning occurs (Ozuah, 2005). According to Lee (1998), the adult learner has a

need to be seen as being able to take care of themselves. Russell (2006) noted that adults, in general, enter into new learning experiences in order to change and that each individual brings personal motivation along with a vast collection of experiences. The field of adult education has had a number of people contribute to its growth and understanding as a major academic discipline. It is important to examine the work of some of the major contributors to the field in order to better understand learning styles and the use of the learning style instruments.

Malcolm Knowles is one of the major figures in the adult education field. Knowles is known as the "Father of Andragogy" for his focus on this aspect of adult education (Knowles, Holton, III, & Swanson, 2005). Andragogy literally means "to lead man" and "The theory of andragogy has been developed in contrast to the theory of pedagogy, which has dominated our view of teaching human being of all ages" (McPherson & Lorenz, 1985, p. 57). One of the key points that Knowles (1977) made is that those teaching adults cannot teach adults the same way that they would teach children. Knowles (1970), defined pedagogy as the art and science of teaching children. Knowles said there are five assumptions in the pedagogy model:

1. The learner is dependent on another person.
2. The learner lacks relevant experience.
3. The learner is ready to learn what they have been told to learn in order to advance to the next grade.
4. Learners enter into an educational activity with a subject-orientation to learning.
5. Learners are motivated by external pressures from teachers and parents.

Marshak (1983) has described pedagogy as teacher centered where the goal learning were set, the learning process was directed and results evaluated by the teacher. He considered that pedagogy is appropriate to educate and train children and possibly at times, adults as well.

There are six core learning assumptions of andragogy that Knowles described (Knowles, Holton III, & Swanson, 2005):

1. The learner's need to learn.
2. The learners' self-concept.
3. The role of the learners' experiences.
4. The learners' readiness to learn.
5. The learners' orientation to learning.
6. The learners' motivation for learning.

Smith (2002) described the ideal andragogical environment as being the "friendly and informal climate in many adult learning situations, the flexibility of the process, use of experience, and the enthusiasm and commitment of participants" (p. 4).

The two models of learning, pedagogical and andragogical, differ in their approaches to the design and operation of educational programs. In the pedagogical model, there is a content plan which will require the teacher to respond to four areas of interest (Knowles & Associates, 1984). These four areas of interest are:

1. Teachers have a responsibility to determine what content materials need to be covered.
2. Teachers must determine how the content will be organized into management units.

3. Teachers must develop the most logical sequence to present the materials.
4. Teachers have to decide what is the most efficient means of transmitting this information.

Jarvis (1985) compared pedagogy and andragogy in the following Table 1.

Table 1

Comparison of Pedagogy and Andragogy

	Pedagogy	Andragogy
The learner	Dependent	Moves towards independence Self-directing
The learner's experience	Of little worth	A rich resource for learning
Readiness to learn	People learn what society expects them to	People learn what they need to know
Orientation to learning	Acquisition of subject matter	Learning experiences should be based around experiences

Knowles (1977) developed seven phases that he says are necessary in implementing an adult education program where there are specific learning experiences:

1. "The establishment of a climate conducive to adult learning.
2. The creation of an organizational structure for participative planning.
3. The diagnosis of needs for learning.
4. The formulation of directions of learning (objectives).
5. The development of a design of activities.
6. The operation of the activities.
7. The re-diagnosis of needs for learning (evaluation)." (p. 54)

Cyril Houle was Knowles' advisor at the University of Chicago and is credited by Knowles with being a major influence on Knowles' understanding of adult education. Houle (1961) believed there were three types of adult learners: (1) the goal oriented learner – undertakes learning to achieve some type of goal, (2) the activity oriented learner – this learner seeks to have an experiences beyond the content of the learning material that was presented, (3) the learning oriented individual – this learner seeks knowledge for its own sake.

Houle (1964) developed seven principles of effective learning:

1. Act as though you are certain to learn.
2. Set realistic goals – and measure their accomplishment.
3. Remember the strength of your own point of view.
4. Actively fit new ideas and new facts into context.
5. Seek help and support when you need it.
6. Learn beyond the point necessary for immediate recall.
7. Use psychological as well as logical practices.

Another key figure in the development of the adult education field was Allen Tough. Tough (1979) developed a theory that was based on what he called the learning project. Tough's theory is based on the belief that adults take deliberate action in creating meaningful learning experiences. Tough goes on to say that he felt it was important that learners have a number of options on how to learn. Tough thought it was important that teachers offer creative approaches in the classroom to help learners succeed.

According to Merriam (2009), andragogy has been through the years the template that was used to design instruction for the adult learner. She notes that while andragogy

isn't going away from the adult education field, there are a number of new ideas that have emerged in the practice of adult education. One such idea is transformational learning as developed by Jack Mezirow. Merriam (2009) describes transformational learning as "a theory that sees learning as a process of construing new or revised interpretations of experience through example" (p. 456). Meriam (2009) notes that the idea of spirituality and adult learning has gained more emphasis. Essentially, adults learn important life lessons through significant spiritual experiences.

Merriam (2009) also noted that research has been done around holistic learning opportunities in adult education where the focus is on engaging and reconnecting the body and mind in learning experiences that guide best practices and inform adult learning theory. She also notes that new methods to enhance learning by aligning practice with the understanding of brain function has emerged. Finally, Merriam (2009) points out that narrative learning is an important part of adult education. In narrative learning, learning is fostered through stories and conceptualized through the learning process itself.

Learning Styles

Learning styles have been defined in different ways but according to Hiemstra and Sisco (1990), the emphasis is usually placed on the learning and the learning environment. Dembo (1994), stated "style refers to the consistent ways in which individuals respond to the wide range of perceptual and intellectual tasks" (p. 403). Sonbuchner (1991) defined learning styles as "the variety of ways people take in, store, and retrieve information" (p. 13). Pask (1976) believed that people learn in different ways and therefore, they tend to adopt a particular learning strategy. Most people have a preferred learning style but many adapt their learning styles according to the task at hand. Learning style may also be defined as personal qualities that influence a student's ability

to acquire information, to interact with peers and the teachers, and otherwise participate in learning experiences (Grahsa & Yangarber-Hicks, 2000). A common definition of a learning style is the "individual's characteristic ways of processing information, feelings, and behaving in learning situations" (Smith, 1982, p. 24).

Dunn and Dunn (1993) defined learning styles as "the way each learner begins to concentrate on, process, and retain new and difficult information" (p. 2). Another definition by James and Gardner (1995) is that learning styles are "the ways individual learners react to the overall learning environment" (p. 19). And still another definition is by Grasha (1990) which defines learning styles as "preferences that students have for thinking, relating to others, and for various classroom environments and experiences" (p. 106).

Keefe (1987) believed there were three broad dimensions to learning styles: information processing or cognitive, affective learning, and physiological styles. Cognitive or information processing refers to the learner's mode of perceiving, thinking problem solving, and remembering. The affective style deals with the learner's mode of attitudes, values, and interest. Physiological styles are based on reactions to the physical environment, and differences related to health and gender.

Hawk and Shah (2007) developed five propositions for the use of learning style instruments (pp. 14-15):

1. The diagnostic use of one of more learning style instruments and the subsequent use of matching learning activities should result in higher levels of adult student satisfaction with the learning in a course.

2. The diagnostic use of one or more learning style instruments and the subsequent use of matching learning activities should result in higher levels of academic performance by adult students in a course.

3. The diagnostic use of one or more learning style instruments and the subsequent use of matching learning activities should result in deeper, more lasting adult student learning in a course beyond the course.

4. The diagnostic use of one or more learning style instruments and the subsequent use of matching learning activities should result in an increase in the ability of adult students to learn in different ways in a course and beyond the course.

5. The diagnostic use of two or more learning style instruments and the subsequent use of matching learning activities should result in higher levels of academic performance for the adult students that the diagnostic use of just one learning style instrument.

James and Blank (1993) indicated there were three major points to consider when choosing a learning style instrument – conceptual base, research data, and practical consideration. As stated by James and Blank (1993), "An instrument's conceptual or theoretical base can be determined by a careful examination of its title, state purpose, subscale titles, and intended audience" (p. 48). According to Lang (2004), "Research in learning styles attempts to categorize individuals into different categories by the patterns they use to take in, perceive, and interpret situations" (p. 19).

Research in formal education programs has determined that learning styles impact students in areas such as environment, student reinforcement, class structure, and

teaching methods (Burris et al, 2008). According to Anderson (2007), research has found an improvement in student response to course material when courses were designed based on the learning styles of students. Anderson went on to suggest that students will learn better when their learning style preferences are considered when designing course and that to meet the needs of diverse learning styles, instructors should "construct activities that include specific and multiple learning preferences" (p. 105). Garland and Martin (2005) reported the identification of student learning styles facilitated the development of course materials that better engaged students in the learning process.

Hall and Moseley (2005) developed a method of to examine learning style models based on the validity, reliability, and practical application of the instrument. Their work determined that there were thirteen learning models that were "potentially influential" (p. 247). The models were: Allinson and Hayes' Cognitive Styles Index, Apter's Motivational Style Profile, Dunn and Dunn model and instruments of learning styles, Entwistle's Approaches and Study Skills Inventory for Students, Gregorc's Mind Styles Model and Style Delineator, Hermann's Brain Dominance Instrument, Honey and Mumford's Learning Styles Questionnaire, Jackson's Learning Styles Profiler, Kolb's Learning Style Inventory, Myers-Briggs Type Indicator, Riding's Cognitive Analysis, Sternberg's Thinking Styles Inventory, and Vermunt's Inventory of Learning Styles.

James and Blank (1993) identified learning styles based on the dimensions of perceptual modality, information processing, personality factors, and a combination.

Perceptual Modality Instruments

1. Multi-Modal Paired Associates Learning Test – Revised (MMPALT)

Gilley (1975/1976) developed the Multi-Modal Paired Associates Learning Test (MMPALT) which measurers the physiological elements of learning styles. Specifically, the instrument examines the perceptual learning modalities which are print, aural, oral, visual, haptic, and motor skills. Cherry (1981) did a revision to the MMPALT and included the olfactory sensory modality and changed the name of the oral modality to interactive and the motor skills modality to kinesthetic. Cherry (1981) stated that it is "a seven-set paired associates learning test designed to rank order the perceptual modality strengths and weaknesses of each subject through objective measurement" (p. 16). The seven styles are defined as follows:

1. Print or Tactile – these learners learn best by underlining while they are reading or taking notes while they are listening (Price & Griggs, 1985).
2. Aural or Auditory – will learn best when listening to verbal instruction such as discussions or lectures (Price & Griggs, 1985).
3. Interactive – interactive learners will learn best through verbalization (Institute for Learning Styles Research, 2003).
4. Visual – the visual learner learns best by reading or observing (Price & Griggs, 1985).
5. Haptic – these learners will learn best through the sense of touch (Institute for Learning Styles Research, 2003).
6. Kinesthetic – the kinesthetic learner will learn best through action or body movement (Price & Griggs, 1985).

7. Olfactory – these learners learn best through the sense of taste and smell. They will associate certain smells with specific memories from the past (Institute for Learning Styles Research, 2003).

The Institute of Learning Styles Research revised the MMPALT-II in 1996 and has made revisions throughout the years to the MMPALT-III.

2. Swassing-Barbe Modality Index

According to James and Blank (1993), the Swassing-Barbe Modality Index tests "the recall of sensory data within three modalities" (p. 52). The instrument was developed to measure the strength of three modalities – visual, kinesthetic, and auditory. The instrument is used to find out a person's ability to perform an academically challenging task in each of the three modalities (Barbe, Swassing & Milone, 1979).

3. Barbe-Milone Modality Checklist

The Barbe-Milone Modality Checklist was developed using the same modalities as the Swassing-Barbe Modality Index but it is used by instructors who might be interested in comparing the learning styles of their students with their own learning styles. According to James and Blank (1993), the instrument requires an individual to check one statement that is most like them. There are ten sets of three questions.

Information Processing Instruments

1. Gregorc's Style Delineator

Gregorc (1982) developed a self-assessment instrument using The Mediation Ability Theory as its basis. He introduced the inventory based on the

theories of Carl Jung with the intent of measuring the mediation or cognitive abilities of perception and ordering (O'Brien, 1991). The main point of the theory is that the human mind has channels through which information is received and revealed effectively and efficiently. The outward appearance of an individual's mediation abilities is called style. The Gregorc Style Delineator identified the mediation abilities of perception and ordering. Perception abilities are described as abstract and concrete as follows whereas ordering abilities are described as sequence and random:

Abstract – the abstract quality allows a person to conceive and mentally visualize data through reason and intuitively and emotionally register and deal with inner and subjective thoughts.

Concrete – the concrete quality enables a person to understand and mentally register data though the direct use and application of the physical senses.

Sequence – the sequence quality allows the mind to grasp and organize information in a linear, step-by-step, predetermined order.

Random – the random quality disposes the mind to grasp and organize information in a galloping, leaping, and nonlinear manner.

2. Kolb's Learning Style Inventory

Kolb (1984) developed the Learning Style Inventory (LSI) using his Experiential Learning Theory (ELT). The ELT was structured on the foundational works of John Dewey and Kurt Lewin and offers a synergistic theory based on a learning cycle activated by the interconnectedness of the dual dialectic dimensions of action/reflection and experience/abstraction (Baker, Jensen, &

Kolb, 2005). The LSI instrument assesses an individual's ability to learn from experience. Kolb identified three approaches to learning: (1) concrete experience (CE) which incorporates feeling, (2) reflective observation (RO) incorporates watching, abstract conceptualization (AC) incorporates thinking, and (3) active experimentation (AE) incorporates doing. The LSI is a self-report instrument containing nine items each consisting of four words (Carrier, Newell, & Lange, 1982). The instructions for the LSI ask the participant to rank order the four words that describe his or her learning style. Only one word in each item will correspond to one of the learning style modes. The instructions remind the participants that there are no right or wrong answers and that they must choose one answer by assigning the number 4 to the word that best characterizes one's learning style, a number 1 least like them, a number 3 to one word in the remaining pair that is most like them and a number 2 to the word remaining.

Kolb (2000) identified the learning styles of diverging, assimilating, converging, and accommodating from the results of the Learning Style Inventory. Each of these learning styles is defined as follows:

Diverging – people with the diverging learning style observe rather than take action. They are best at viewing concrete situations from many different points of view. They may prefer working in groups, listening with an open mind, and receiving feedback.

Assimilating – people with the assimilating learning style are best at understanding a wide range of information and putting it into a concise logical form. They prefer lectures, reading and having time to think things through.

Converging – people with the converging learning style are best at finding practical uses for ideas and theories. They prefer to experiment with new ideas, laboratory assignments, simulations and practical applications.

Accommodating – people with the accommodating learning style have the ability to learn primarily from hands-on experience. They prefer to work with other to get assignments done, to do field work, and to test different approaches to completing a project.

3. Grasha-Reichmann's Student Learning Styles Scales

According to Cassidy (2004), the Grashsa-Reichmann's Student Learning Styles Scale places learners in participant/avoidant, independent/dependent, collaborative/competitive, level and type of interactions. There are ninety items on the scale. Grabowski & Jonassen (1993) indicated "This measure can be classified as a social interaction scale because it deals with patterns of preferred styles of interaction with teachers and fellow students in a learning environment rather than how information is perceived or organized" (p. 281).

4. Hermann's Brain Dominance Inventory

Hermann (1988) developed the instrument based on the four quadrants of the physical brain. Quadrants were identified clockwise as A, B, C, and D, starting from the left cerebral quadrant. Quadrant A measures external learning and is logical, technical, analytical, factual, critical and mathematical. Quadrant B has to do with procedural learning and is structured, sequential, organized, detailed, and planned. Quadrant C deals with interactive learning, and is interpersonal, emotional, listening, kinesthetic, feedback, sharing ideas and experiencing sensory input. Quadrant D has to do with internal learning and is innovative, holistic, visual, conceptual and imaginative.

Personality Factors Instruments

1. Myers-Briggs Type Indicator

A self-report questionnaire instrument concerned with individual differences in perception and judgement that would identify affective styles was developed by Myers (1962).

The instrument became known as the Myers-Briggs Type Indicator (MBTI). Affective styles identify aspects of personality that included emotion, attention, valuing, and the motivational process. Meyers and Meyers (1980) defined the theoretical basis for the MBTI as: a theory that enables society to expect specific personality differences in particular people and to cope with the people with the differences in a constructive way. The theory is that much seemingly chance variation in human behavior is not due to chance; it is in fact the logical results of a few basic, observable differences in mental functioning (p. 1).

The MBTI represents real world situations and word choices that force the participant into making choices. The instrument has to be administered and interpreted by a qualified person. The choices made by the participant represent a pattern of responses that reveal four preference areas. The four personality types are: (1) Extroversion (E) versus Introversion (I), (2) Sensing (S) versus Intuition (N), (3) Thinking (T) versus Feeling (F), and (4) Judging (J) versus Perception (P). The different combinations of these four scales results in sixteen possible personality types. Briggs-Myers (1998) gave the 16 MBTI types as: ISTJ, ISFJ, INFJ, INTJ, ISTP, ISFP, INFP, INTP, ESTP, ESFP, ENFP, ENTP, ESTJ, ESFJ, ENFJ, and ENTJ.

2. Canfield's Learning Styles Inventory

This questionnaire requires self-reporting with thirty attitudinal items that describe the students' preferred learning styles modalities. According to Keri (2002), the participants are asked to rank their responses in a four-point scale with ranges going from (1) for the most liked choice to (4) for the least liked choice. There are eight subscales that represent the conditions for learning with four dealing with areas of interest and four modes of learning scales.

3. Keirsey Temperament Sorter

This instrument is a 70 bi-polar self-report questionnaire that surveys personality (Keirsey & Bates, 1984). Developed in 1979, the instrument was developed to help individuals discover their personality type. There are four personality types or temperaments which are guardian, rationalist, idealist, and artisan.

Combination Instruments

1. Center for Innovative Teaching Experiences (CITE) Learning Styles Instrument

The CITE is a self-report instrument where the participants are expected to self-report to 45 questions. In the results of the CITE, there are nine styles which are auditory and visual language, auditory and visual numerical, auditory-visual-kinesthetic combination, individual and group learner, oral and written expressive.

2. Dunn, Dunn, and Price's Productivity Environmental Preference Survey (PEPS)

The PEPS was developed based on the belief of the developers that "learning style is a biologically and developmentally determined set of personal

characteristics that make the identical instruction effective for some students and ineffective for others" (Dunn & Griggs, 2000, p. 9)

According to Koch (1998), the PEPS identifies 18 diverse elements of four basic stimuli of emotional, environment, physical, and emotional domains. The instrument was described by Lovelace (2005), as having a "robust moderate to large effect that was practically and educationally significant" (p. 176).

Other Learning Style Instruments

There are a number of other learning styles models and instruments. This group includes the following:

1. Allinson and Hayes' Cognitive Styles Index (CSI) – The CSI was developed mainly in management to determine one's cognitive style. The instrument consists of 38 self-report items (Cassidy, 2004). According to Hatfield et al. (2006), this index is a single bipolar scale with intuition linked to right-brain orientation and analysis linked to left-brain, although the developers viewed brain orientation as a metaphor rather than an actual description of what occurs in the two sides of the brain.

2. Apter's Motivational Style Profile (MSP) – the MSP measures metamotivational dominance in the four dyads of telic-paratelic, negativistic-conformist, mastery-sympathy, and autic-alloic (Kerr, Au, and Lindner, 2004). Apter (2001) noted that this approach differs from personality type based models in that qualities like conformity and competitiveness are seen as shifting motivational states rather than fixed personal characteristics.

3. Entwistle's Approaches and Study Skills Inventory for Students (ASSIST) – Vermunt and Vermetten (2004) stated that the inventory consists of scales in the domains of cognitive processes like deep, surface, strategic and apathetic approaches, and study motivation and affection. According to Entwistle, et al. (1979), there are differences between style as a student's preferred way of tackling learning tasks and the student's strategy which is indicative of the way a student chooses to deal with a specific task in light of the perceived demands.

4. Friedman and Stritter Instructional Preference Questionnaire – According to Curry (1991), the instrument describes learning preferences for pacing, media, active role in learning, influence over learning, and the feedback during learning.

5. Gardner's Multiple Intelligences Theory – Howard Gardner developed a concept or theory of multiple intelligences that does not have learning techniques or classroom skills as it primary objective, but rather the primary purpose of multiple intelligence theory is to provide an alternative to the Intelligence Quotient test that was developed by Binet at the beginning of the 20th century (Nettlebeck & Wilson, 2005). Gardner proposed eight intelligences – verbal/linguistic, musical, body-kinesthetic, logical-mathematical, intrapersonal, interpersonal and naturalistic.

6. Hemispheric Mode Indicator – McCarthy's Hemispheric Mode Indicator (HMI) instrument was developed to determine each individual's use of brain hemisphericity with reference to an individual's learning. The HMI differentiates between left-brain learners, right-brain learners, and whole-brain learners (Huston & Huston, 1995). Left-brain learners are concrete thinkers, right-brain learners are

symbolic thinkers, and whole-brain learners use both modes of thinking. The right hemisphere processes a cluster of stimuli contemporaneously while the left hemisphere processes one stimuli at a time in a sequential manner. According to James and Blank (1993), the instrument consists of 32 pair bi-polar statements to rate on a Likert scale.

7. Hill's Cognitive Style Mapping (CSM) – The CSM is a self-report instrument consisting of 224 items and is used to determine a learner's cognitive style (Jonassen and Grabowski, 1993).

8. Honey and Mumford's Learning Styles Questionnaire – The Learning Style Questionnaire was developed by Honey and Mumford (1992) to measure four learning styles – activist, reflector, theorist, and pragmatist.

9. Jackson's Learning Styles Profiler (LSP) – Coffield, et. al., (2004), stated that this instrument is used mostly for business and education. Jackson (2002) identified four types of learners that included: the Initiator, the Reasoner, the Analyst, and the Implementer. Characteristics of each are as follows: initiator – impulsive, sensation seeking, leaps before looking, extrovert, speaks before thinking; reasoner – objective, intellectual, provides rationality and insight; analyst – cautious, introverted, methodical, reasonable planner; implementer – practical and realistic.

10. Jerome Kagan's Matching Familiar Figures Test – According to Curry (1991), this instrument measures the degree that people will reflect on the validity of solution hypotheses in problems that consist of response uncertainty.

11. Learning Preference Scale: Students (LPSS) – The LPSS was developed to determine preferences in working and competing with peers and consists of 30 true or false statements (Sonnenwald and Li, 2003).

12. National Association for Secondary Principal's Learning Style Profile (LSP) – According to James and Blank (1993), the LSP was developed to provide data for three major areas of cognitive styles, perceptual styles, and study and instructional preferences. The LSP consists of 126 items.

13. Pinchas Tamir's Cognitive Preference Inventory – this instrument has 18 items of four statements that are rank ordered to signify four modes of recalling questioning, principles, and application (Curry, 1991).

14. Rezler and Rezmovic Learning Preference Inventory – this inventory consists of 15 items with six choices which are rank ordered. The instrument was developed to identify the individual's preferred modes of learning, with the preference defined as a choice made by an individual of one learning situation or condition over another (Curry, 1991).

15. Riding's Cognitive Styles Analysis (CSA) – this instrument is not a self-report instrument but rather presents cognitive tasks in such a way that it is not evident to the participant exactly what is being measured (Coffield et. al, 2004).

16. Schmeck's Inventory of Learning Processes – According to Schmeck, Ribich, and Ramaniah (1977), is a self-report instrument that measures individual differences in a learning process using synthesis-analysis, study methods, fact retention and elaborate processing.

17. Silver and Hanson's Teaching, Learning, and Curriculum Model – there are 30 pairs of four self-description items that should be ranked according to their preference in this inventory. James and Blank (1993) mentioned that the instrument was used to develop several other instruments for both teachers and students.

18. Sternberg's Thinking Styles Questionnaire (TSI) – the TSI proposed 13 thinking styles with eight statements rated on a 1-7 Likert-type scale, depending on four forms, three functions, two score, two levels and two leanings of government (Sternberg, 1999). The terms that Sternberg used were hierarchic, oligarchic, monarchic and anarchic for forms of government; judicial, legislative, and executive for the three functions of government; internal and external for the two scopes; global and local for levels of government; and conservative and liberal for the leanings of government.

19. Vermunt's Inventory of Learning Styles – this instrument is a diagnostic tool used in higher education. The instrument concentrates on the learning and thinking of university students and was used to study the learning styles of teachers and student teachers (Coffield, et al, 2004).

20. Witkin's Group Embedded Figures Test – this instrument consists of 18 pictorial items which were used to score for accuracy and time. According to Curry (1991), the score of the instrument will reveal a respondent's tendency to function at a more or less differentiated level.

Index of Learning Styles

The Index of Learning Styles (ILS) instrument was developed by Richard Felder and Barbara Soloman to integrate learning styles into instruction and develop a positive learning experience for learners. The ILS was based on the learning style model formulated by Felder and Linda Silverman. The initial version of the ILS was created in 1991. An updated version was created in 1994 and was made available as a paper and pencil version in 1996. In 1997, an online version was made available. The ILS is made available at no cost to those who wish to determine their own learning style and for educators to teach, research, or advise. The ILS is designed to be completed online and automatically scored with the score reported immediately to the user.

Felder, when discussing the design of the ILS, rejects the idea that the purpose of learning styles is to facilitate the design of individualized instruction (Litzinger, et al, 2007). Felder believed that learning styles assessments should not be used to label people for the purposes of describing curriculum choices or draw conclusion about their potential for success or failure in any particular endeavor. Felder believed that a learning style could call attention to areas that might need additional concentration. Felder asserted that the ILS was developed on the belief that effective learning style models are rooted in the fluid trait category and that the principle trait of the ILS is to provide a balanced approach for teaching strategies.

Felder (1993), noted that most educators will typically teach from the perspective of their own preferred learning style, and they generally teach the way themselves were taught. Felder noted that it would be virtually impossible to address all learning styles at the same time but recommends instead that instructors try to address each learning style

dimension at least some of the time. Felder also suggests that to do so would not require any drastic changes in teaching style or any major overhaul of materials. He also indicated that educators should inquire about their students' learning styles, assuring struggling learners that they are in no way learning impaired, but simply learn differently.

The ILS classifies students into four dimensions: perception, input, processing, and understanding (See Table 2).

Table 2

Four Dimensions of Learning Styles

Dimensions	Learning Styles
Perception	Sensory/Intuitive
Input	Visual/Verbal
Processing	Active/Reflective
Understanding	Sequential/Global

The four learning style Index of Learning Styles dimensions as developed by Felder and Solomon were summarized into a "preference profile on the dimensions" by Baldwin and Sabry (2003) (p. 331) as shown in Table 3.

Table 3

Learning Style Dimensions

Dimensions		Categorization	Preferences
Active-Reflective	Active	Information processing: through active and interactive engagement in physical activity or discussion.	Like trying things, discussing what they learn, applying it or explaining it to others. Tend to like group work. Find it hard sitting in lectures only taking notes without doing something active.
Active-Reflective	Reflective	Information processing: through introspection.	Prefer to think about what they learn quietly first. Prefer working alone. Find it hard sitting in lectures only taking notes without being given the chance to reflect on what has been learned.
Sensing-Intuitive	Sensing	Perception of: information: sights, sounds, physical sensation.	Tend to like learning facts, solving problems using familiar and well-established methods and dislike complications, surprises, to be tested on material that has not been fully covered in class. Tend to be patient with details and good at memorizing facts and doing hands-on (laboratory) work. Tend to be more practical and careful; do not like courses that have no apparent connection to the real world. Remember and understand information best if they can see how it connects to the real world.

Dimensions		Categorization	Preferences
Sensing-Intuitive	Intuitive	Perception of information: memories, ideas, insights.	Like innovation and prefer discovery-based approaches, finding relationships, dislike repetition and impatient with details. Good at grasping new concepts and are often more comfortable with abstractions and mathematical formulations. Tend to work faster. Get bored with courses that involve a lot of memorization, rote learning and routine operations.
Visual-Verbal	Visual	Perception of sensory information: pictures, diagrams, graphs, demonstration.	Tend to remember best what they see: static pictures or dynamic pictures.
Visual-Verbal	Verbal	Perception of sensory information: sounds, written, spoken words, formulas.	Tend to get more out of words (written and spoken explanations).
Sequential-Global	Sequential	Progress towards understanding: in logical and small incremental steps.	Tend to gain understanding/find solutions in linear manner, with steps following each other logically. Sequential learners may not fully understand the material or establish a link with other parts, but able to know a lot about specific aspects of a subject.

Dimensions		Categorization	Preferences
Sequential-Global	Global	Progress toward understanding: in non-linear way, large jumps, holistically.	Tend to learn in large jumps, absorb material almost randomly, and may be able to solve complex quickly. Strongly global learners may be fuzzy about details or have serious difficulties understanding until they have the big picture.

Active and Reflective

Felder and Silverman (1988) determined that learners who are active are those who actively do something in class other than simple listening and watching but they are involved in argument, brainstorming, discussion, questions and answers, and or reflection. Felder and Silverman (1988) described an active learner as one who is comfortable with or better at "active experimentation than reflective observation and conversely for a reflective learner" (p. 678).

In Table 4, Felder and Silverman (1988) distinguish between active and reflective learners.

Table 4

Differences between Active and Reflective Learners

Active Learners	Reflective Learners
do not learn much in situations that require them to be passive (such as most lectures)	do not learn much in situations that provide no opportunity to think about the information being presented (such as most lectures).

Sensing and Intuitive

Felder and Silverman (1988) ascertained that "A student who favors intuitive over sensory perception, for example, would respond well to an instructor who emphasizes concepts (abstract content) rather than facts (concrete content)" (p. 674). In Table 5, Felder and Silverman (1988) distinguish between sensors and intuitors.

Table 5

Differences between Sensors and Intuitors

Sensors	Intuitors
like facts, data and experimentation	prefer principles and theories
like solving problems by standard methods and dislike "surprises"	like innovation and dislike repetition
are patient with detail but do not like complications	are bored by detail and welcome complications
are good at memorizing facts	are good at grasping new concepts
careful but may be slow	are quick but may be careless
sensor's slowness in translating words puts them at a disadvantage in timed tests: since they may have to read questions several times before beginning to answer them, they frequently run out of time.	are more comfortable with symbols than sensors. Since words are symbols, translating them into what they represent comes naturally to intuitors and is a struggle for sensors. May also do poorly on timed tests but for a different reason- their impatience with details may induce them to start answering questions before they have read thoroughly and to make careless mistakes.

Visual and Verbal

Felder and Silverman (1988) determined that learners who are visual learn better when they are exposed to diagrams, pictures, flowcharts, timelines, films, and demonstrations. In Table 6, Felder and Silverman distinguish between visual and verbal learner differences.

Table 6

Difference between Visual and Verbal Learners

Visual	Verbal
remember best when they see: pictures, diagrams, flow charts, time lines, films, demonstrations.	remember much of what they hear and more of what they hear and then say, get a lot out of discussion, prefer verbal explanation to visual demonstration and learn effectively by explaining things to others.

Sequential and Global

Felder and Silverman (1988) noted that sequential learners learn best when material is presented in a logical manner whereas global learners learn in fits and starts. In Table 7, Felder and Silverman (1988) distinguish between sequential and global learners.

Table 7

Differences between Sequential and Global Learners

Sequential	Global
follow linear reasoning processes when solving problems	make intuitive leaps and may be unable to explain how they came up with solutions.
can work with material when they understand it partially or superficially	while global learners may have great difficulty doing so
may be strong in convergent thinking and analysis	global learners may be better at divergent thinking and synthesis
learn best when material is presented in a steady progression of complexity and difficulty	sometimes do better by jumping directly to more complex and and difficult material

Summary

This chapter – literature review – discussed the Alabama Real Estate Commission – its structure, its educational component, and its mandated instructional methods. Learning theory was discussed next with emphasis on behavioral, cognitive, humanist, and social learning theory. The overall field of adult education was discussed with specific attention paid to andragogy. Learning styles was then discussed with the final section specifically reviewing the Index of Learning Styles.

CHAPTER III

METHODS

Introduction

The understanding of learning styles is an important part of the planning process of both instructors and course designers in order to provide the most positive learning experience for students. In order to assist students in achieving their highest academic goals, learning styles research is a necessity in today's education environment.

The first chapter addressed the purpose, statement of the problem, research questions, definition of terms, significance, assumptions, limitations and the organization of the study. The second chapter was the literature review which discussed learning theory, adult education, learning styles, learning styles models, the Index of Learning Styles instrument, and the learning styles of active and reflective, sensing and intuitive, visual and verbal, and sequential and global. This chapter focuses on the design of the study, variables, the reliability and validity of the survey instrument, the sample, data collection, procedure and analysis.

Purpose of the Study

The purpose of this study was to examine the relationship among real estate instructors' learning styles from instructors approved or licensed by the Alabama Real Estate Commission as measured by the Index of Learning Styles – active/reflective, sensing/intuitive, visual/verbal and sequential/global. Alabama Real Estate Commission instructors are either approved in a category as Continuing Education Instructors, or licensed in as category as Prelicense/Post License Instructors. The examination also

included gender, age, license type, real estate experience, teaching experience, and formal education.

According to Baldwin and Sabry (2003), "the purpose of examining the learning styles of learners is to better understand the behavior patterns that learners exhibit so that they can be incorporated into interactive learning systems and thus be more effective and efficient in helping learners to learn" (p. 327). Griggs (1985) stated that "increased research studies demonstrates the importance of accommodating individual learning style preferences in the learning process" (p. 202). Cuthbert (2005) believed that " knowledge of the student's learning styles could be important to the teacher since it allows him/her to adjust his/her pedagogic strategies" (p. 246).

Adult education should strive not only to teach subject areas to students, in this case real estate, but it should also build skills in their preferred modes so that students learn to adapt to situations. Felder (2005) stated, "when mismatches exist between learning styles of most students in a class and the teaching style of the professor, the students may become bored and inattentive in class, do poorly on tests, get discouraged about the courses, the curriculum, and themselves, and in some cases change to other curricula or drop out of school" (para. 2).

Research Questions

This study was guided by the following two research questions:

1. What are the relationships among real estate instructors' learning styles from instructors approved or licensed by the Alabama Real Estate Commission as measured by the Index of Learning Styles?

2. What are the relationships among real estate instructors' learning styles from instructors approved or licensed by the Alabama Real Estate Commission, as measured by the Index of Learning Styles, based on gender, age, license type, real estate experience, teaching experience, and formal education?

Design of the Study

This study used the Index of Learning Styles (ILS) survey as developed by Felder and Solomon (1999) as part of its research design. The Index of Learning Styles was made available online using SurveyMonkey to all instructors approved or licensed by the Alabama Real Estate Commission. The ILS survey with 44 questions and a demographic survey with 7 questions were included in the online survey. Responses were confidential and numbers were assigned to each participant to code the data.

The study was conducted after obtaining permission from the University's Institutional Review Board (IRB) by the researcher for the use of human subjects for research (See Appendix A). The request consent detailed the abstract, purpose, participants, selection of participants, methods to collect, analyze, and security of the data. All Alabama real estate instructors were emailed and invited to participate in the study. Consent was given by the instructor going to SurveyMonkey and completing the demographic profile and the ILS. There was no monetary benefit or compensation for taking the survey. Participants were also told how they could go to the ILS site and take the survey and get an actual individual report of their learning styles along with an explanation of its meaning.

The researcher collected the surveys from SurveyMonkey and then entered the data at the ILS site and generated a report for each participant. The surveys were coded in

SurveyMonkey and the same coding was used to generate the report that was then used to analyze the data. The coding went from 1 to 102. The participant information letter, demographic questionnaire, Index of Learning Styles survey and sample ILS report that was generated are included as appendices (see Appendices B, C, D, E, and F).

Sample

The participants for this study included all real estate instructors that were either licensed or approved by the Alabama Real Estate Commission. Data collection took place over two semesters. The participants were not required to participate in the survey due to the potential for a violation of Alabama Ethics Laws by the researcher if all were forced to participate. The Commission had the authority to force all instructors to participate but left participation as voluntary.

Instrumentation

The Index of Learning Styles (ILS) was used to identify the learning styles of Alabama real estate instructors approved or licensed by the Alabama Real Estate Commission as of December 2015. Permission to use the Index of Learning Styles was obtained from the Internet site, in which Felder (2006) stated in response to the question, "May I use the ILS in my research?" His response was as follows: "Yes, If you use the ILS and/or publish anything related to the ILS or data obtained with it, please site as follows: Felder, R. M. and Soloman, B. A., (n.d.). Index of Learning Styles. Retrieved from http://www.ncsu.edy/felder-public/ILSpage.html" (quest. 8).

The survey questions are related to four domains – active/reflective, sensing/intuitive, sequential/global and visual/verbal.

There are 11 questions for each domain. The preferences of the learning styles are expressed with the values +11 to -11 for each domain. The questions are forced-choice items with two options with an answer *(a)* of value +1 and an answer *(b)* of value -1. The participants are expected to select the most appropriate answer for each question. The scores are added to determine whether a participant is mild, medium/moderate or strong in any particular learning style. A mild learning style ranges from 1-3, the medium/moderate from 4-6 and the strong from 7-10 in the respective learning style.

For this study, the survey consisted of two sections. The first section was the demographic survey developed by the researcher. The demographic section contained seven questions consisting of one fill-in-the-blank and six multiple choice questions regarding instructor type, gender, age, real estate experience, teaching experience, and formal education. The second section was the ILS survey with 44 questions. Each participant's responses were scored by inputting the responses of the participants into the ILS site. The demographic survey was grouped together with the ILS survey.

Reliability and Validity

It has been recognized that validity and reliability for learning style instruments scores are major issues within the learning style research. Ferrell (1983) defined validity as particular assumptions made from test scores that are appropriate, meaningful, and useful. Gall, Gall, and Borg (2007) stated validity has been defined as "the appropriateness, meaningfulness, and usefulness of specific inferences made from test scores" (p. 657) and defined reliability as "the extent to which other researchers would arrive at similar results if they studied the same case using exactly the same procedures as the first researcher" (p. 651). According to James and Blank (1993), validity involves

how appropriate or useful a test is for the measurement of the desired information. Reliability is determined by the consistency of the test results over multiple examinations. “In the literature, test/retest and internal consistency are the most often cited measures of reliability of learning-style instruments” (p. 49).

ILS is used to assess the unique strong and weak learning style characteristics that each individual possesses and measured the dichotomous dimensions of learning. Baldwin and Sabry (2003) summarized that in spite of its low validity and reliability, the ILS is the most frequently used instrument by several researchers. They further indicated that the instrument was chosen for their study “because of its applicability to online learning and its relevance to the principles of interactive learning systems (ILSs) design” (p. 329). According, the Litzinger et al. (2005), the ILS demonstrates test-retest reliability and construct validity as determined by participant feedback and factor analysis.

De Bello (1990) indicated that when considering a learning style model, it should demonstrate reliability and validity for both the model and its measure and the model should be utilized in practitioner and research based work. Zwyno (2002) concluded that their reliability data justified claim that the ILS is a suitable instrument for assessing learning styles. Felder and Spurlin (2005) examined the survey responses of 584 students at North Carolina State University and found Cronbach’s coefficients to be in the range 0.55 to 0.76. The Cronbach’s alpha for a pilot study conducted by the researcher was (.055) similar to the reliability scores reported by Felder and Spurlin (2005) which were .056 to 0.77. Though the instrument is not ideal in terms of reliability and validity, the psychometric properties are better than those of most instruments. The Index of Learning

Styles has overall demonstrated reliability and validity, is used frequently by educators and researchers and has recent influence in the field of learning styles (Scott, 2010).

Since the sample for this study consisted of a convenient sample size, external validity was greatly impacted and therefore, generalizability of the results of the study is not known. According to Miglietti and Strange (2009), because of this, the study conclusion is less likely to hold a high degree of importance for other persons or in other places.

Data Collection

The survey was administered and the data were collected electronically via SurveyMonkey. The data were collected confidentially and numbers were assigned to each participant to code the data. IBM SPSS Statistics 24.0 (SPSS, 2016) software was used to analyze the data. Descriptive statistics were used for the demographics and rather than use a manual scoring guide each participant's responses were entered on the Index of Learning Styles website to determine the learning styles of the participants.

Data Analysis

The participants consisted of 102 real estate instructors that were approved or licensed by the Alabama Real Estate Commission. Data collection took place over two semesters. Demographic information was collected in this study using a questionnaire designed by the researcher which consisted of seven questions referring to instructor type, gender, age, whether the person had a real estate license, years of real estate experience, years of teaching experience, and formal education. The learning styles information was collected using the Index of Learning Styles survey with 44 questions with forced-choice answers of 'a' or 'b'.

To address the research questions of the study, data were analyzed using descriptive statistics through the Chi-square analysis. Descriptive statistics were used to describe the participants. According to Gall, Gall, and Borg (2007), descriptive statistics are "mathematical techniques for organizing, summarizing, and displaying a set of numerical data" (p. 638). The Chi-square analysis was used to measure the relationship between instructor types and their learning styles scores. A Chi-square analysis was used to measure demographic variables of gender, age, whether one had a real estate license, years of real estate experience, years of teaching experience, and formal education. Nicol and Pexman (1999) stated that a Chi-square determines "whether differences between observed and expected frequencies are statistically significant" (p. 43). According to Gall, Gall, and Borg (2007) the Chi-square test is "a nonparametic test of statistical significance that is used when the research data are in the form of frequency counts for two or more categories" (p. 634).

Summary

This chapter described the purpose and design of the study, instrumentation – Index of Learning Styles Survey – reliability and validity, the sample for the study, data collection, and analysis. Data were collected in compliance with the Institutional Review Board of Auburn University.

CHAPTER IV

RESULTS

This chapter presents the results of the analyzed data associated with each of the research questions. The demographic profile of the sample population and the analysis of the data collected from the Index of Learning Styles survey are also discussed. To analyze data, the IBM SPSS Statistics 24.0 (SPSS, 2016) software was used.

Purpose of the Study

The purpose of this study was to examine the relationship among real estate instructors' learning styles from the instructors approved or licensed by the Alabama Real Estate Commission as measured by the Index of Learning Styles. The study also examined the relationship between the learning styles and the demographic information of gender, age, real estate status, real estate experience, instructor experience, and formal education.

Research Questions

This study was guided by the following two research questions:

1. What are the relationships among real estate instructors' learning styles of the instructors approved or licensed by the Alabama Real Estate Commission as measured by the Index of Learning Styles?
2. What are the relationships among real estate instructors' learning styles of the instructors approved by the Alabama Real Estate Commission as measured by the

Index of Learning Styles, based on gender, age, real estate license status, real estate experience, instructor experience, and formal education.

Instrument – Index of Learning Styles

The Index of Learning Styles survey was used to measure the four domains of active/reflective, sensing/intuitive, visual/verbal and sequential/global learning styles for the study. There were two sections in the survey. The demographic survey developed by the researcher was the first section. The Index of Learning Styles survey comprised the second section. There were seven questions consisting of one fill-in-in-the-blank and six multiple choice questions regarding instructor type, gender, age, real estate license status, real estate experience, instructor experience, and formal education in the demographic section. A scoring guide that was already in place for the ILS survey, and descriptive statistics for the demographics were used to determine and describe the learning styles of the participants.

The Index of Learning Styles consists of 44 questions, 11 for each domain. All of the questions were focused-choice items with ‘a’ and ‘b’ options. The answer a value is +1 and the answer b value is -1. The participants were expected to select the most appropriate answer of the answer that represents them the most for each question. The scale is considered to be ipsative that forces participants to rank instead of rate items.

Questions 1,5, 9,13,17,21,25,29,33,37, and 41 measure the domain of active/reflective with ‘a’ for active and ‘b’ for reflective. Questions 2,6,10,14,18,22,26,30,34,38 and 42 measure the domain of sensing/intuitive with ‘a’ for sensing and ‘b’ for intuitive. Questions 3,7,11,15,19,23,27,31,35,39, and 43 measure the domain of visual/verbal with ‘a’ for visual and ‘b’ for verbal. Questions

4,8,12,16,20,24,28,32, 36,40, and 44 measure the domain of sequential/global with ‘a’ for sequential and ‘b’ for global.

Demographic Results

The total number of real estate instructors (*N*=102) constitute the sample for this study. The participants completed a survey with seven demographic questions and 44 learning style questions (Appendices C and D) as presented over the internet using SurveyMonkey.

Index of Learning Styles Domains

Active/Reflective Learners

Out of the 102 participants, 65 were active learners, and 37 were reflective learners. The majority of the students were active learners and just over a third were reflective learners (see Table 8).

Sensing/Intuitive Learners

The results of the study yielded 58 sensing learners and 44 were verbal learners. Just over half of the learners were sensing learners (see Table 8).

Visual/Verbal Learners

The data indicated that there were 78 visual learners and 24 verbal learners. There were over three times as many visual learners as there were verbal learners (see Table 8).

Sequential/Global Learners

The data revealed that there were 58 sequential learners and 44 global learners. Just over half of the instructors were sequential learners and a little under one half were global learners (see Table 8).

Table 8

Distribution and Percentages of Participants by Learning Style Domains

Learning Styles	*n*	%
Active	65	64%
Reflective	37	36%
Sensing	58	57%
Intuitive	44	43%
Visual	78	76%
Verbal	24	24%
Sequential	58	57%
Global	44	43%

N=102

Instructor Type

The participants in this study were either Prelicense/Post License instructors or Continuing Education instructors. Out of the 102 participants, 54 were Prelicense/Post License instructors and 48 were Continuing Education instructors (See Table 9).

Table 9

Distribution and Percentages of Participants by Instructor Type

Instructor Type	*n*	%
Prelicense/Post License Instructor	54	53%
Continuing Education Instructor	48	47%

N=102

Table 10 presents the distribution and percentages of participants by learning style domain and Instructor Type. The survey is an ipsative survey with four domains. The data in Table 10 indicates that the dominant learning styles were active, sensing, visual, and sequential for instructor type. The data indicated that the percentage of active/reflective learners, sensing/intuitive learners, and visual/verbal learners was essentially the same for Prelicense/Post License Instructors and Continuing Education Instructors. The data revealed that there were more sequential learners in the Prelicense/Post License Instructors with 63% compared to 50% among Continuing Education Instructors.

Table 10

Distribution and Percentages of Participants by Learning Styles Domains and Instructor Types

Learning Styles	Prelicense/Post License		Continuing Education	
	n	%	n	%
Active	33	61%	32	67%
Reflective	21	39%	16	33%
Sensing	32	59%	26	54%
Intuitive	22	41%	22	46%
Visual	41	76%	37	77%
Verbal	13	24%	11	23%
Sequential	34	63%	24	50%
Global	20	37%	24	50%

N=102

Gender

The participants for the study were male and female real estate instructors. Out of the 102 participants, 49 were male and 53 were female. Percentage analysis of the data indicated that the participation by both female and male real estate instructors was almost equal (see Table 11).

Table 11
Distribution and Percentages of Participants by Gender

Gender	n	%
Female	53	52%
Male	49	48%

N=102

The data in Table 12 presents the distribution and percentages of participants by learning style domains and gender. The data revealed there were more active, sensing, visual and sequential learners in both females and males. The percentages for active/reflective and sequential/global were essentially the same for females and males. Sensing females at 62% were at a higher percentage than sensing males at 51%. While females were visual at 91%, this number was smaller for males at 82%.

Table 12

Distribution and Percentages by Learning Style Domains and Gender

Learning Styles	Females		Males	
	n	%	n	%
Active	34	64%	31	63%
Reflective	19	36%	18	37%
Sensing	33	62%	25	51%
Intuitive	20	38%	24	49%
Visual	48	91%	40	82%
Verbal	5	9%	9	18%
Sequential	30	57%	28	57%
Global	23	43%	21	43%

N=102

Age

The participants of the study were between the ages of 30 and 80. There were 3 participants between the ages of 30 and 39, 7 participants between the ages of 40 and 49, 29 participants between the ages of 50 and 59, 41 participants between the ages of 60 and 69, and 23 participants over 70 years of age. 92 percent of the participants were at least 50 years old (see Table 13).

Table 13

Distribution and Percentages of Participants by Age

Age	n	%
30-39	3	3%
40-49	7	7%
50-59	29	28%
60-69	41	40%
70-Over	23	22%

N=102

Table 14 represents the distribution of participants by learning styles domains and age. Table 15 represents the percentage of participants by learning styles domains and age. There were not sufficient number of participants in the 30-39 age category to make any generalizations. From age 40 and over, percentages were consistent in those favoring active over reflective, sensing over intuitive, visual over verbal, and sequential over global. Those 60 and over were more active than reflective as compared to those aged 40 to 59. Those aged 50 to 59 were much more sensing than other age groups. Those 70 and over were more sequential than other groups.

Table 14

Distribution of Participants by Learning Style Domains and Age

Learning Styles	30-39	40-49	50-59	60-69	70 and Over
Active	2	4	16	28	15
Reflective	0	3	13	13	8
Sensing	1	3	20	22	12
Intuitive	1	4	9	19	11
Visual	2	5	20	33	18
Verbal	0	2	9	8	5
Sequential	2	4	15	22	15
Global	0	3	14	19	8

N=102

Real Estate Status

Of those participating in the study, 85 held a Broker's License, 2 held a Salesperson's License, and 15 did not hold a real estate license. The vast majority of those that participated in the study held some type of real estate license (see Table 16).

Table 15

Percentages of Participants by Learning Styles Domains and Age

Learning Styles	30-39	40-49	50-59	60-69	70 and over
Active	100%	57%	55%	68%	65%
Reflective	0%	43%	45%	32%	35%
Sensing	50%	43%	69%	54%	53%
Intuitive	50%	57%	31%	46%	47%
Visual	100%	71%	69%	80%	78%
Verbal	0%	29%	31%	20%	22%
Sequential	100%	57%	52%	54%	65%
Global	0%	43%	48%	46%	35%

N=102

Table 16

Distribution and Percentages of Participants by License Type

License Type	n	%
Broker License	85	84%
Salesperson License	2	2%
No Real Estate License	15	14%

N=102

Table 17 presents the distribution and percentage of participants by learning style domain and license status. The data analysis indicated that the majority of brokers, salesperson, and those instructors with no real estate license were active, sensing, visual, and sequential.

There were not enough salespersons in the study to draw any conclusions as to the learning style domains of salespersons. Brokers and those were no real estate license were consistent across domains except that those with no real estate license were intuitive rather than sensing.

Table 17

Distribution and Percentage of Participation by Learning Style Domains and License Type

	Broker		Salesperson		No License	
Learning Styles	n	%	n	%	n	%
Active	54	64%	2	100%	9	60%
Reflective	31	36%	0	0%	6	40%
Sensing	50	59%	1	50%	7	47%
Intuitive	35	41%	1	50%	8	53%
Visual	64	75%	2	100%	12	80%
Verbal	21	25%	0	0%	3	20%
Sequential	48	56%	2	100%	8	53%
Global	37	43%	0	0%	7	47%

N=102

Real Estate Experience

There were 87 participants that hold either a real estate Broker License or a Salesperson License. Of those 87 who held a real estate license, almost all of the participants had over 11 years of experience in the real estate profession. Only one participant had five years or less of experience (see Table 18).

Table 18

Distribution and Percentages of Participants by Real Estate Experience

Real Estate Experience	n	%
More than 30 years	39	46%
21 to 30 years	22	25%
11 to 20 years	22	25%
6 to 10 years	3	3%
5 years or less	1	1%

N=87

Tables 19 and 20 represent the distribution and percentages by learning style domains and real estate experience. There were not sufficient numbers of participants that had less than 10 years of experience to draw any conclusions. The data indicated that the majority of instructors with real estate experience were active, sensing, visual and sequential.

Table 19
Distribution of Participants by Learning Styles Domains and Real Estate Experience

Real Estate Experience	30+	21to30	11to20	6to10	<5
Active	24	17	11	3	1
Reflective	13	5	11	1	1
Sensing	21	15	11	3	1
Intuitive	16	7	11	1	1
Visual	30	14	17	3	2
Verbal	7	8	5	1	0
Sequential	23	14	11	1	1
Global	14	8	11	3	1

N=87

Table 20
Percentages of Participants by Learning Styles Domains and Real Estate Experience

Real Estate Experience	30+	21to30	11to20	6to10	<5
Active	65%	77%	50%	75%	50%
Reflective	35%	23%	50%	25%	50%
Sensing	57%	68%	50%	75%	50%
Intuitive	43%	32%	50%	25%	50%
Visual	81%	64%	77%	75%	100%
Verbal	19%	36%	23%	25%	0%
Sequential	62%	64%	50%	25%	50%
Global	38%	36%	50%	75%	50%

n=87

Instructor Experience

Of those participating in the study, 30 participants had less than five years of teaching experience, 19 had 6 to 10 years of experience, 24 had 11 to 20 years of experience, 13 had 21 to 30 years of experience, and 16 had over 30 years of teaching experience. (see Table 21).

Table 21

Distribution and Percentages of Participants by Instructor Experience

Real Estate Experience	n	%
More than 30 years	16	16%
21 to 30 years	13	13%
11 to 20 years	24	24%
6 to 10 years	19	19%
5 years or less	30	30%

N=102

Tables 22 and 23 represent the distribution and percentages by learning style domains and instructor experience. The data analysis indicated that the vast majority of real estate instructors were active, sensing, visual, and sequential regardless of their years of instructor experience.

Table 22
Distribution of Participants by Learning Styles Domains and Instructor Experience

Instructor Experience	30+	21to30	11to20	6to10	<5
Active	10	9	17	11	18
Reflective	6	4	7	8	12
Sensing	8	8	17	13	12
Intuitive	8	5	7	6	18
Visual	13	11	21	12	21
Verbal	3	2	3	7	9
Sequential	10	6	17	14	11
Global	6	7	7	5	19

N=102

Table 23
Percentage of Participants by Learning Styles Domains and Instructor Experience

Instructor Experience	30+	21to30	11to20	6to10	<5
Active	62%	69%	71%	58%	60%
Reflective	38%	31%	29%	42%	40%
Sensing	50%	62%	71%	68%	40%
Intuitive	50%	38%	29%	32%	60%
Visual	81%	85%	88%	63%	70%
Verbal	19%	15%	12%	37%	30%
Sequential	63%	46%	71%	74%	36%
Global	37%	54%	29%	26%	64%

N=102

Formal Education

Of those participating in the study, 45 participants had a Master's degree or higher, 27 had a bachelor's degree, and 30 had a 2-year degree or less (see Table I).

Table 24

Distribution and Percentages of Participants by Formal Education

Formal Education	n	%
PhD/Law	19	19%
Masters	26	25%
Bachelors	27	26%
2-Year	12	12%
HS/GED	18	18%

N=102

Tables 25 and 26 represent the distribution and percentages by learning style domains and formal education. The data analysis indicated that the vast majority of real estate instructors were active, sensing, visual, and sequential regardless of their formal education.

Table 25
Distribution of Participants of Learning Styles Domains and Formal Education

Formal Education	HS/GED	2-Year	Bachelors	Masters	PhD/Law
Active	13	6	20	17	9
Reflective	5	6	7	9	10
Sensing	12	7	11	19	9
Intuitive	6	5	16	7	10
Visual	12	8	24	21	13
Verbal	6	4	3	5	6
Sequential	10	5	16	16	11
Global	8	7	11	10	8

N=102

Table 26
Percentage of Participants of Learning Styles Domains and Formal Education

Formal Education	HS/GED	2-Year	Bachelors	Masters	PhD/Law
Active	72%	50%	74%	65%	47%
Reflective	28%	50%	26%	35%	54%
Sensing	67%	58%	41%	73%	47%
Intuitive	23%	42%	59%	27%	54%
Visual	67%	67%	89%	81%	68%
Verbal	23%	23%	11%	19%	32%
Sequential	55%	42%	59%	62%	58%
Global	45%	58%	41%	38%	42%

N=102

Results by Instructor Type

A chi-square test was conducted to address the research questions of the relationship between the participant's instructor type and the learning styles domains. The instructor type acted as the independent variable in the analysis and the learning styles as the dependent variables.

The results showed no statistical significance X^2 (5, N=102) = 4.529, p=.469 for active/reflective and the two types of instructors. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .491 also showing no statistical significance for active/reflective and the two types of instructors. The results showed no statistical significance X^2 (5, N=102) = 2.446, p=.785 for sensing/intuitive and the two types of instructors. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .795 also showing no statistical significance for sensing/intuitive and the two types of instructors. The results showed significant difference X^2 (5, N=102) = 4.672, p=.457 for visual/verbal and the two types of instructors. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .468 also showing no significance for visual/verbal and the two types of instructors. The results showed no statistical significance X^2 (5, N=102) = .5.261, p=.385 for sequential/global and the two types of instructors. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .387 also showing no significance for sequential/global and the two types of instructors.

Table 27

Chi-square Analysis of Participant's Learning Styles and Instructor Type

Learning Styles Domains	X^2 (5)	p*	Fishers' Exact*
Active/Reflective	4.529	.469	.491
Sensing/Intuitive	2.446	.785	.795
Visual/Verbal	4.672	.457	.468
Sequential/Global	5.261	.385	.387

N=102 *Significant if p<.05

Results by Gender

A chi-square test was conducted to address the research questions of the relationship between the participant's age and the learning styles domains. The participant's age acted as the independent variable in the analysis and the learning styles domain as the dependent variable.

The results showed no statistical significance X^2 (5, N=102) = 5.012, p=.414 for active/reflective and the gender of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .432 also showing no statistical significance for active/reflective and the gender of the participants. The results showed no statistical significance X^2 (5, N=102) = 2.861, p=.721 for sensing/intuitive and the gender of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .736 also showing no statistical significance for sensing/intuitive and the gender of the participants. The results showed no significant difference X^2 (5, N=102) = 4.995, p=.417 for visual/verbal and the two types of instructors. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .436 also

showing no significance for visual/verbal and the gender of the participants. The results showed no statistical significance X^2 (5, N=102) = 9.170, p=.102 for sequential/global and the two types of instructors. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .102 also showing no significance for sequential/global and gender of the participants.

Table 28

Chi-square Analysis of Participant's Learning Styles and Gender

Learning Styles Domains	X^2 (5)	p*	Fishers' Exact*
Active/Reflective	5.012	.414	.491
Sensing/Intuitive	2.861	.721	.795
Visual/Verbal	4.995	.417	.436
Sequential/Global	9.170	.102	.102

N=102 *Significant if p<.05

Results by Age

A chi-square test was conducted to address the research questions of the relationship between the participant's age and the learning styles domains. The participant's age acted as the independent variable in the analysis and the learning styles domain as the dependent variable.

The results showed no statistical significance X^2 (20, N=102) = 17.524, p=.619 for active/reflective and the gender of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .636 also showing no statistical significance for active/reflective and the gender of the participants. The results showed no statistical significance X^2 (20, N=102) = 23.310, p=.274 for sensing/intuitive and the

gender of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .206 also showing no statistical significance for sensing/intuitive and the gender of the participants. The results showed no significant difference X^2 (20, N=102) = 18.693, p=.542 for visual/verbal and the two types of instructors. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .618 also showing no significance for visual/verbal and the gender of the participants. The results showed no statistical significance X^2 (20, N=102) = 18.070, p=.583 for sequential/global and the two types of instructors. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .408 also showing no significance for sequential/global and gender of the participants.

Table 29

Chi-square Analysis of Participant's Learning Styles and Age

Learning Styles Domains	X^2 (20)	p*	Fishers' Exact*
Active/Reflective	17.524	.619	.636
Sensing/Intuitive	22.310	.274	.206
Visual/Verbal	18.693	.542	.618
Sequential/Global	18.070	.583	.408

N=102 *Significant if p<.05

Results by License Type

A chi-square test was conducted to address the research questions of the relationship between the participant's license type and the learning styles domains. The

participant's license type acted as the independent variable in the analysis and the learning styles domain as the dependent variable.

The results showed no statistical significance X^2 (10, N=102) = 16.017, p=.099 for active/reflective and the license type of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .073 also showing no statistical significance for active/reflective and the license type of the participants. The results showed no statistical significance X^2 (10, N=102) = 4.915, p=.897 for sensing/intuitive and the license type of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .922 also showing no statistical significance for sensing/intuitive and the license type of the participants. The results showed no significant difference X^2 (10, N=102) = 2.804, p=.986 for visual/verbal and the license type of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .995 also showing no significance for visual/verbal and the license type of the participants. The results showed no statistical significance X^2 (10, N=102) = 7.774, p=.651 for sequential/global and the license type of instructors. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .696 also showing no significance for sequential/global and the license type of the participants.

Table 30

Chi-square Analysis of Participant's Learning Styles and License Type

Learning Styles Domains	X^2 (10)	p*	Fishers' Exact*
Active/Reflective	16.017	.099	.073
Sensing/Intuitive	4.915	.897	.922
Visual/Verbal	2.804	.986	.995
Sequential/Global	7.774	.651	.696

N=102 *Significant if p<.05

Results by Real Estate Experience

A chi-square test was conducted to address the research questions of the relationship between the participant's real estate experience and the learning styles domains. The participant's real estate experience acted as the independent variable in the analysis and the learning styles domain as the dependent variable.

The results showed no statistical significance X^2 (10, N=87) = 21.306, p=.379 for active/reflective and the real estate experience of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .242 also showing no statistical significance for active/reflective and the real estate experience of the participants. The results showed no statistical significance X^2 (10, N=87) = 15.477, p=.748 for sensing/intuitive and the real estate experience of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .750 also showing no statistical significance for sensing/intuitive and the real estate experience of the participants. The results showed no significant difference X^2 (10, N=87) = 13.938, p=.834 for visual/verbal and the real estate experience of the participants. Due to the

small sample size, Fisher's Exact Test was run that resulted in a p value of .710 also showing no significance for visual/verbal and the real estate experience of the participants. The results showed no statistical significance X^2 (10, N=87) = 15.647, p=.738 for sequential/global and the real estate experience of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .566 also showing no significance for sequential/global and the real estate experience of the participants.

Table 31

Chi-square Analysis of Participant's Learning Styles and Real Estate Experience

Learning Styles Domains	X^2 (20)	p*	Fishers' Exact*
Active/Reflective	21.306	.379	.242
Sensing/Intuitive	15.477	.748	.750
Visual/Verbal	13.938	.834	.710
Sequential/Global	15.647	.738	.566

N=87 *Significant if p<.05

Results by Teaching Experience

A chi-square test was conducted to address the research questions of the relationship between the participant's teaching experience and the learning styles domains. The participant's teaching experience acted as the independent variable in the analysis and the learning styles domain as the dependent variable.

The results showed no statistical significance X^2 (20, N=102) = 10.933, p=.948 for active/reflective and the teaching experience of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .937 also showing

no statistical significance for active/reflective and the teaching experience of the participants. The results showed no statistical significance X^2 (20, N=102) = 14.657, p=.796 for sensing/intuitive and the teaching experience of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .831 also showing no statistical significance for sensing/intuitive and the teaching experience of the participants. The results showed no significant difference X^2 (20, N=102) = 26.452, p=.151 for visual/verbal and the teaching experience of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .042 which does show significance for visual/verbal and the teaching experience of the participants. The results showed no statistical significance X^2 (20, N=102) = 20.242, p=.443 for sequential/global and the teaching experience of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .411 also showing no significance for sequential/global and the teaching experience of the participants.

Table 32

Chi-square Analysis of Participant's Learning Styles and Teaching Experience

Learning Styles Domains	X^2 (20)	p*	Fishers' Exact*
Active/Reflective	10.933	.948	.937
Sensing/Intuitive	14.657	.796	.831
Visual/Verbal	26.452	.151	.042
Sequential/Global	20.242	.443	.411

N=102 *Significant if p<.05

Results by Formal Education

A chi-square test was conducted to address the research questions of the relationship between the participant's formal education and the learning styles domains. The participant's formal education acted as the independent variable in the analysis and the learning styles domain as the dependent variable.

The results showed no statistical significance X^2 (20, N=102) = 20.242, p=.443 for active/reflective and the formal education of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .411 also showing no statistical significance for active/reflective and the formal education of the participants. The results showed statistical significance X^2 (20, N=102) = 33.516, p=.030 for sensing/intuitive and the formal education of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .042 also showed statistical significance for sensing/intuitive and the formal education of the participants. The results showed no significant difference X^2 (20, N=102) = 19.406, p=.496 for visual/verbal and the formal education of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .422 which does show significance for visual/verbal and the formal education of the participants. The results showed no statistical significance X^2 (20, N=102) = 16.078, p=.672 for sequential/global and the formal education of the participants. Due to the small sample size, Fisher's Exact Test was run that resulted in a p value of .411 also showing no significance for sequential/global and the formal education of the participants.

Table 33

Chi-square Analysis of Participant's Learning Styles and Formal Education

Learning Styles Domains	X^2 (20)	p*	Fishers' Exact*
Active/Reflective	20.242	.443	.411
Sensing/Intuitive	33.516	.030	.042
Visual/Verbal	19.406	.496	.422
Sequential/Global	16.708	.672	.701

N=102 *Significant if p<.05

Summary

This chapter presented the results of the study after surveying 102 participants learning styles from real estate instructors approved or licensed by the Alabama Real Estate Commission. The participants completed a voluntary self-report survey of 51 questions with 7 demographic and 44 learning style questions. There were 54 Prelicense/Post License instructors and 48 Continuing Education instructors participating. There were 49 males and 53 males that participated. Of those participating, 92 were over 50 years of age. There were 85 brokers that participated, 2 salespersons, and 15 that did not have a real estate license. For the 87 that held a real estate license, 61 of them had over twenty years of experience in the profession. As to teaching experience, 29 had over twenty years of teaching experience but 30 had five years of less. Of those participating, 45 had a Master's degree or higher.

There were 65 active learners and only 37 reflective learners. The category of sensing/intuitive was closer to even with 58 sensing learners and 44 verbal learners. There were almost three times as many visual learners as verbal learners with there being

78 visual learners and 24 verbal learners. Just over half of the learners were sequential learners and a little under half were global learners.

The study explored two research questions to examine the relationship among instructors as approved or licensed by the Alabama Real Estate Commission as measured by the Index of Learning Styles. It also examined the relationship among instructor as approved or licensed by the Alabama Real Estate Commission as measured by the Index of Learning Styles based on instructor type, gender, age, real estate experience, teaching experience, and formal education.

CHAPTER V

SUMMARY, DISCUSSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Introduction

This study explored the relationship of learning styles among instructors that were approved or licensed by the Alabama Real Estate Commission. The first chapter introduced the purpose, statement of the problem, research questions, definition of terms, significance, assumptions, limitations and the organization of the study. The second chapter discussed the literature review of adult education and adult learners, historical review and background of learning styles, learning style models, Index of Learning Styles survey and the visual and verbal, active and reflective, sensing and intuitive, sequential and global learning styles. The third chapter described the design of the study, the instrument – Index of Learning Styles – reliability and validity, the population sample, data collection, procedure and analysis and a summary. The fourth chapter explained the instrument – Index of Learning Styles, and depicted the results of the demographic profile, instructor type, gender, age, license type, real estate experience, teaching experience, and formal education along with chi-square results. The present chapter provides conclusions, discussion and recommendations for research.

Purpose of the Study

The purpose of this study was to examine the relationship among real estate instructors' learning styles from instructors approved or licensed by the Alabama Real Estate Commission as measured by the Index of Learning Styles – active/reflective,

sensing/intuitive, visual/verbal and sequential/global. Alabama Real Estate Commission instructors are either approved in a category as Continuing Education Instructors, or licensed in as category as Prelicense/Post License Instructors. The examination also included gender, age, license type, real estate experience, teaching experience, and formal education.

According to Baldwin and Sabry (2003), "the purpose of examining the learning styles of learners is to better understand the behavior patterns that learners exhibit so that they can be incorporated into interactive learning systems and thus be more effective and efficient in helping learners to learn" (p. 327). Griggs (1985) stated that "increased research studies demonstrates the importance of accommodating individual learning style preferences in the learning process" (p. 202). Cuthbert (2005) believed that " knowledge of the student's learning styles could be important to the teacher since it allows him/her to adjust his/her pedagogic strategies" (p. 246).

Adult education should strive not only to teach subject areas to students, in this case real estate, but it should also build skills in their preferred modes so that students learn to adapt to situations. Felder (2005) stated, "when mismatches exist between learning styles of most students in a class and the teaching style of the professor, the students may become bored and inattentive in class, do poorly on tests, get discouraged about the courses, the curriculum, and themselves, and in some cases change to other curricula or drop out of school" (para. 2).

Research Questions

This study was guided by the following two research questions:

1. What are the relationships among real estate instructors' learning styles from instructors approved or licensed by the Alabama Real Estate Commission as measured by the Index of Learning Styles?

2. What are the relationships among real estate instructors' learning styles from instructors approved or licensed by the Alabama Real Estate Commission, as measured by the Index of Learning Styles, based on gender, age, license type, real estate experience, teaching experience, and formal education?

Summary

The sample of this study consisted of 102 instructors who were approved or licensed by the Alabama Real Estate Commission. The Alabama Real Estate Commission is responsible for the licensing and regulation of real estate licenses in the state of Alabama. The survey was conducted during the spring and summer of 2015. The survey consisted of 52 questions – 7 demographic and 44 Index of Learning Styles questions. The survey was made available on SurveyMonkey and data were collected confidentially. Participants were given instructions on how to get an individualized analysis from the ILS website along with an explanation of the various domains.

The independent variables are the scores from the Index of Learning of Learning Styles. The dependent variables are the components of the demographic data – instructor type, gender, age, license status, years of real estate experience, years of teaching experience, and formal education. The demographic data revealed that there were 54 (53%) Preliense/Post License Instructors and 48 (47%) Continuing Education Instructors. There were 53 (52%) females and 49 (48%) males. The participants ranged in age from 30 to 82 with 92% being over the age of 50. There were 85 (84%) participants that held a

broker license, 2 (2%) that held a salesperson license, and there were 15 (14%) that did not hold a real estate license. For the 87 participants that held a real estate license, 61 (71%) had more than twenty years of real estate experience. Thirty participants (30%) had less than 5 years of teaching experience whereas 43 (43%) had more than ten years of teaching experience. As to formal education, 45 (45%) had a Master's degree or higher and 84 (82%) had some formal education beyond high school.

There were almost twice as many active learners as there were reflective learners, 64% to 36%. There was not a great difference between sensing and intuitive learners, 57% to 43%. There were almost three times visual learners as there were verbal learners, 76% to 24%. There was not a great difference between sequential and global learners, 57% to 43%.

Discussion

Instructional methods and strategies will have a profound impact on learning outcomes. Instructors may choose to employ a pedagogical or andragogical approach to their teaching. Pedagogy refers to a teacher-centered learning environment where the teacher directs and evaluates the learning process. The teacher makes decisions on what, how and when learning will occur under the pedagogical method. The pedagogical method is an appropriate method to use when teaching children or teenagers. However, the pedagogical method is not appropriate for adult learners.

Andragogy refers to a learner-centered approach where the learners take responsibility for the learning process. Under the andragogical approach, the instructor is a facilitator and the student is self-directed and takes responsibility for their learning. Students in Alabama real estate courses are all adults. Real estate instructors will want to

take into account a number of factors in order to enhance the learning experience – experience, self-concept, the readiness to learn, and the student's orientation to learning. Many of the learners in adult education real estate courses could benefit from the adragogical model being in place where there is learner-centered instruction. If the instructor will be aware of students' learning styles and make the student aware of them, the learning experience will likely be enhanced. James and Blank (1991) indicated that most educators agree that the primary goals of education is to maximize the learning of each student; therefore, it is the responsibility of all educators to assist students in learning all that they can in a very efficient method. According to Jaeger (2001), it is important that when addressing a student's learning style the teacher remembers that this is only one piece of the puzzle and that a variety of teaching styles will be needed to meet the needs of all or most of the students in the class.

Alabama real estate instructors and the general population did not differ in any significant way as to which learning styles domains were most prevalent. The most prevalent domains are active, sensing, visual, and sequential. Real estate instructors can relate to the fact that they learn much as their students do. This fact should help them understand that instructional methods that would not help them if they were taking a course should be carefully scrutinized before being used by the instructor.

The relationship among real estate instructors that were approved or licensed by the Alabama Real Estate Commission was examined using the Chi-square statistical technique. The examination revealed that there was no statistical significance among the demographic variables of instructor type, gender, age, license type, real estate experience, teaching experience, and formal education.

Implications

This study was undertaken in an effort to explore the relationship between real estate instructor approved or licensed by the Alabama Real Estate Commission. The participants in the study were predominately active, sensing, visual, and sequential learners.

It is clear from the review of literature that instructors can enhance the learning process by planning their curriculum and teaching to match the learning styles of the various students. If a learner is aware of his/her learning style they may be able to make highest use of their preferred learning style and move away from the learning styles that are less preferred. In the following sections, each of the four domains – active/reflective, sensing/intuitive, visual/verbal, and sequential/global – is discussed in relationship to how instructors might plan teaching to enhance the learning of each student by teaching to each student's preferred learning styles.

According to Felder and Solomon (1993), everyone will be in all of the domains at one time or another. For instance, sometimes one would be active but sometimes they would be reflective. The preference for one category over the other can be strong, moderate, or mild. Having a balance of the two is desirable.

This study spurred an interest in learning styles that had not previously received much attention among Alabama real estate instructors. Alabama real estate instructors now understand that learning styles really do exist but that a learning style is only one piece of the puzzle in planning curriculum and instruction. One suggestion that has been made to the Commission and that is under advisement is to bring in an expert in learning styles to hold an instructor development workshop where instructors can get versed in the

overall subject of learning styles and learn practical ways to use a learning style instrument.

Active and Reflective Learners

The results of the study indicated that 64% of the participants were active learners while 36% were reflective learners. According to Felder and Solomon (1993), there are a number of ways to distinguish between the active and reflective learner. Some of these are:

1. The active learner will tend to retain and understand information by doing something active with it while the reflective learner prefers to think about it quietly first.
2. A phrase that an active learner would use is "Let's try it out and see how it works" whereas a phrase that a reflective learner would use is "Let's think it through first."
3. Group work will be preferable to an active learner while working alone will be preferable to a reflective learner.

Learners can help themselves in educational settings. According to Felder and Soloman (1993), an active learner can help themselves as follows:

> If an active learner is in a class that allows little or no class time for discussion or problem, solving activities, he/she should try to compensate by studying in a group where the member take turns explaining different topics to each other. The active learner should work with others to guess what will be asked on the next test and take turns figuring out how you will answer. The bottom line is that the active learner will retain information better if he/she find ways to do something with it.

The reflective learner can help themselves as follows:

If the reflective learner is in a class where there is little or no time for thinking about new information, when he/she studies stop periodically to review what has been read and think of possible questions or applications. It might also help to write short summaries of readings or class notes in his/her own words.

Sensing and Intuitive Learners

The results of the study indicated that 57% of the participants were sensing learners while 43% were reflective learners. According to Felder and Solomon (1993), there are a number of ways to distinguish between the sensing and intuitive learner. Some of these are:

1. The sensing learner will like learning facts, whereas the intuitive learner will prefer to discover possibilities and relationships.

2. The sensing learner will like solving problems by well-established methods and dislike surprises and complications. The sensing learner will not like being tested on something that has not been explicitly covered in the classroom. The intuitive leaner likes innovation and dislikes repetition.

3. The sensing learner tends to be patient with details and is good at memorizing facts and doing hands-on work. The intuitive learner is more comfortable with new concepts and with abstractions and mathematical formulations.

4. The sensing learner tends to be more practical and careful than intuitors while intuitors tend to work faster and be more innovative.

5. The sensing learner will not like courses that have no apparent connection to the real world. The intuitive learner will not like courses that just involve a lot of routine calculations and memorization.

Learners can help themselves in educational settings. According to Felder and Soloman (1993), a sensing learner can help themselves as follows:

If a sensing learner is in a class where the material is theoretical and abstract, the student should ask the instructor for specific examples of concepts and procedures and find out how the concepts apply in practice.

The intuitive learner can help themselves as follows:

If an intuitive learner is in a class that is primarily memorization and gets bored, the student should ask the instructor for interpretations or theories that link the facts. Since the intuitive learner doesn't like repetition, it is important that he/she force themselves to read the entire question on tests and check the answers they have provided.

Visual and Verbal Learners

The results of the study indicated that 76% of the participants were visual learners while 24% were verbal learners. According to Felder and Solomon (1993), there are a number of ways to distinguish between the visual and verbal learner. Some of these are:

1. The visual learner will best remember what they see such as pictures, diagrams, time lines, flow charts, demonstrations, and films. The verbal learner will get most out of both written and spoken words. Ideally, information is presented both visually and verbally.

Learners can help themselves in educational settings. According to Felder and Soloman (1993), a visual learning can help themselves as follows:

> Try to find diagrams, sketches, schematics, photographs, flow charts, etc. that represents course material that is primarily verbal. Ask the instructor if there is electronic displays of the course material available. Prepare a concept map by listing key points and enclosing them in boxes or circles. Color-code your notes.
>
> The verbal learner can help themselves as follows:
>
> Write summaries of outlines and course materials in his/her own words.
>
> Work in a group to be able to hear classmates explain the material.

Sequential and Global Learners

The results of the study indicated that 57% of the participants were sequential learners while 43% were verbal learners. According to Felder and Solomon (1993), there are a number of ways to distinguish between the sequential and global learner. Some of these are:

> 1. The sequential learner will tend to gain understanding in linear steps, with the steps following logically one after the other. The global learner will learn best in large jumps, taking in material almost at random and then having it all come together mentally.
>
> 2. The sequential learner will tend to follow logical stepwise paths to find solutions. The global learner, once they see the big picture, may quickly put something together but then may have trouble explaining how they arrived at the conclusion.

Learners can help themselves in educational settings. According to Felder and Soloman (1993), a sequential learner can help themselves as follows:

If the instructor skips around, ask the instructor to fill in the skipped steps. While studying, outline the material for yourself in logical order. Work to strengthen global thinking skills.

A global learner can help themselves as follows:

Recognize that you just function different from your classmates but you are not slow or stupid. Skim work to get an overview before starting. Ask the instructor to help you see connections.

Recommendations

This study was limited in that participants were all Alabama real estate instructors. Based on this, some recommendations are in order:

1. The study could be expanded so that all real estate instructors that are approved or licensed by the Alabama Real Estate Commission are required to participate. The Commission has authority to require all instructors to participate for the collection of data.
2. The study could be completed by other real estate commissions where there would be more participants.
3. The study could be completed through a national, professional organization of real estate instructors such as the Real Estate Educator's Association (REEA).
4. Other demographic variables could be added if the study was expanded such as race, ethnicity, and socio-economic status.

5. The study could be expanded by having the instructors self-report what they perceived their learning styles to be before taking the survey instrument and then compare the two.

6. The study could be expanded by requiring all students in a particular course such as salesperson prelicene to take the survey.

The main idea that can be taken from this study is an awareness of learning styles by the real estate instructors who are approved or licensed by the Alabama Real Estate Commission. Instructors can be encouraged by the Commission to learn more about learning styles and to experiment with giving the Index of Learning Styles to their students. Then based on the results, make a conscious effort to change their teaching styles to match the learning styles of the students. The Commission could specifically offer instructor training on learning styles to its instructors. Alabama real estate instructors have many tools at their disposal to make the learning experience of their students as effective as possible. Knowing about learning styles, teaching students about learning styles, and then developing curriculum and teaching methods to take into account the preferred learning styles of all students would greatly enhance learning in Alabama real estate education. Having more focused instructors and students can only better serve the Commission's mandate of protecting the public.

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APPENDICES

APPENDIX A

AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS

REQUEST FOR EXEMPT CATEGORY RESEARCH

For Information or help completing this form, contact: **THE OFFICE OF RESEARCH COMPLIANCE**, 115 Ramsay Hall
Phone: 334-844-5966 **e-mail:** IRBAdmin@auburn.edu **Web Address:** http://www.auburn.edu/research/vpr/ohs/index.htm

Revised 2/1/2014 **Submit completed form to IRBsubmit@auburn.edu or 115 Ramsay Hall, Auburn University 36849.**

Form must be populated using Adobe Acrobat / Pro 9 or greater standalone program (do not fill out in browser). Hand written forms will not be accepted.

Project activities may not begin until you have received approval from the Auburn University IRB.

1. PROJECT PERSONNEL & TRAINING

PRINCIPAL INVESTIGATOR (PI):

Name David Bowen Title Student Dept./School EFLT

Address P. O. Box 230423 Montgomery AL 36123 AU Email bowendl@auburn.edu

Phone 334-546-5649 Dept. Head Ms. Sherida Downer

FACULTY ADVISOR (if applicable):

Name Dr. Maria Witte Title Associate Professor Dept./School EFLT

Address 4012 Haley Center, Auburn University, AL 36849

Phone 334-844-3078 AU Email wittemm@auburn.edu

KEY PERSONNEL: List Key Personnel (other than PI and FA). Additional personnel may be listed in an attachment.

Name	Title	Institution	Responsibilities

The Auburn University Institutional Review Board has approved this document for use from 3/15/15 to 3/14/18 Protocol # 14-473 EX 1503

KEY PERSONNEL TRAINING: Have all Key Personnel completed CITI Human Research Training (including elective modules related to this research) within the last 3 years? ☑ YES ☐ NO

TRAINING CERTIFICATES: Please attach CITI completion certificates for all Key Personnel.

2. PROJECT INFORMATION

Title: An Exploratory Study of Alabama Real Estate Instructors' Learning Styles

Source of Funding: ☑ Investigator ☐ Internal ☐ External

List External Agency & Grant Number:

List any contractors, sub-contractors, or other entities associate with this project.
Alabama Real Estate Commission

List any other IRBs associated with this project (including those involved with reviewing, deferring, or determinations).

FOR ORC OFFICE USE ONLY

DATE RECEIVED IN ORC: 10/2/14	by BK	APPROVAL #: 14-473	
DATE OF IRB REVIEW:	by	APPROVAL CATEGORY:	
DATE OF ORC REVIEW:	by	INTERVAL FOR CONTINUING REVIEW:	
DATE OF APPROVAL:	by		
COMMENTS:			

1 of 3

3. PROJECT SUMMARY

a. Does the research involve any special populations?

- ☐ YES ☑ NO Minors (under age 19)
- ☐ YES ☑ NO Pregnant women, fetuses, or any products of conception
- ☐ YES ☑ NO Prisoners or Wards
- ☐ YES ☑ NO Individuals with compromised autonomy and/or decisional capacity

b. Does the research pose more than minimal risk to participants? ☐ YES ☑ NO

Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. 42 CFR 46.102(i)

c. Does the study involve any of the following?

- ☐ YES ☑ NO Procedures subject to FDA Regulation Ex. Drugs, biological products, medical devices, etc.
- ☐ YES ☑ NO Use of school records of identifiable students or information from instructors about specific students
- ☐ YES ☑ NO Protected health or medical information when there is a direct or indirect link that could identify the participant
- ☐ YES ☑ NO Collection of sensitive aspects of the participant's own behavior, such as illegal conduct, drug use, sexual behavior or use of alcohol
- ☐ YES ☑ NO Deception of participants

If you checked "YES" to any response in Question #3 STOP. It is likely that your study does not meet the "EXEMPT" requirements. Please complete a PROTOCOL FORM for Expedited or Full Board Review.
You may contact IRB Administration for more information. (Phone: 334-844-5966 or Email: IRBAdmin@auburn.edu)

4. PROJECT DESCRIPTION

a. Subject Population (Describe, include age, special population characteristics, etc.)

Individuals holding approval as real estate instructors approved by the Alabama Real Estate Commission. There are two categories: Continuing Education Instructor - indivdiual does not have to hold a real estate license, Prelicense/Post License Instructor - individual must hold a Broker's license in any state. All instructors are at least 21 years of age. The sample size will consist of approximately 175 Continuing Education Instructors and 150 Prelicense/Post License Instructors.

b. Describe, step by step, all procedures and methods that will be used to consent participants.

☑ N/A (Existing data will be used)

The data will be collected as a project of the Alabama Real Estate Commission. Therefore, participants will be asked to participate on the authority of the Commission. After the data is collected, AREC will make the data available to me for use in the dissertation. I will serve as the project manager on the project as an employee of the Alabama Real Estate Commission Project received clearance from the Alabama Ethics Commission (letter attached).

c. **Brief summary of project.** (Include the research question(s) and a brief description of the methodology, including recruitment and how data will be collected and protected.)

The study will seek to determine through descriptive statistics if there is are common learning styles among Alabama real estate instructors.

An online survey will be used to address the goal of the study. This survey is a learning style instrument "Index of Learning Styles" developed by Richard Felder and Barbara Soloman of North Carolina State University, Raleigh, North Carolina. The survey is available at no cost for individuals who wish to determine their own learning style and for educators to teach, advise, or research. The survey questions are related to four dimensions - active/reflective, sensing/intuitive, visual/verbal, and sequential/global. It consists of 44 questions - 11 questions for each dimension. The survey questionnaire's validity and reliability has been established and approved for use in this study by the Committee members.

The survey will be made available online via Survey Monkey. It consists of two sections with 52 questions. The first section will be the demographic survey developed by the researcher. The demographic section consists of 8 questions regarding instructor type, gender, age, real estate license status, years in the real estate profession, years as an instructor, and formal education. The second section would be the learning styles survey with the 44 questions mentioned above. Descriptive statistics for the demographics and a scoring guide for the survey will be used to determine the demographics and learning styles of the participants.

Once the data are collected, the data will be coded into the Statistical Package for the Social Sciences (SPSS) software for processing and analysis. A series of ANOVAs will be conducted to determine whether there is a correlation among the real estate instructors' learning styles. A series of ANOVAs will be be conducted to determine whether a correlation exists between the learning styles and the demographic categories. The investigator will use reasonable care to process and secure the data.

d. **Waivers.** Check any waivers that apply and describe how the project meets the criteria for the waiver.

- ☐ Waiver of Consent (Including existing de-identified data)
- ☑ Waiver of Documentation of Consent (Use of Information Letter)
- ☐ Waiver of Parental Permission (for college students)

Consent is given by actually taking the survey. The study is being conducted by the Alabama Real Estate Commission so no documentation of consent is needed by the investigator. There are no college students involved. All participants are adults over the age of 21.

e. **Attachments.** Please attach Informed Consents, Information Letters, data collection instrument(s), advertisements/recruiting materials, or permission letters/site authorizations as appropriate.

Signature of Investigator David Bryan Date 9/16/14

Signature of Faculty Advisor Daniel Utley Date Oct 1, 2014

Signature of Department Head Theresa Dawson Date 10/2/14

APPENDIX B

AUBURN UNIVERSITY
COLLEGE OF EDUCATION
EDUCATIONAL FOUNDATIONS, LEADERSHIP, AND TECHNOLOGY
4036 Haley Center
Auburn, Alabama 36849
334-844-4460

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THIS DOCUMENT).

INFORMATION LETTER

For a Research Study entitled
"An Exploratory Study of Alabama Real Estate Instructors' Learning Styles"

You are invited to participate in a research study to measure the learning styles of Alabama real estate instructors' learning styles. The study is being conducted by David Bowen, Graduate Student, under the direction of Dr. Maria Witte, Professor, in the Auburn University Department of Educational Foundations, Leadership, and Technology. You are invited to participate because you are approved by the Alabama Real Estate Commission as either an approved continuing education instructor or an approved prelicense/post license instructor and are age 19 or older.

What will be involved if you participate? Your participation is completely voluntary. If you decide to participate in this research study, you will be asked to complete seven demographics questions and complete the Index of Learning Styles Questionnaire which consists of 44 multiple choice items. Your total time commitment will be approximately 10 minutes.

Are there any risks or discomforts? There are no risks or discomforts involved with participating in this study.

Are there any benefits to yourself or others? If you participate in this study, you can expect that there will be a greater understanding achieved of the learning styles' of Alabama real estate instructors. This information will be used by the Alabama Real Estate Commission to enhance training of its instructors.

Will you receive compensation for participating? There is no compensation for participating. You do have our sincere thanks.

Are there any costs? If you decide to participate, you will not incur any costs.

If you change your mind about participating, you can withdraw at any time by simply closing your browser window. Once you've submitted anonymous data, it cannot be withdrawn since it will be unidentifiable. You decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Educational Foundations, Leadership, and Technology or the Alabama Real Estate Commission.

Please add this approval information in sentence form to this letter. Send your updated letter to the IRB with a live link to the survey.

The Auburn University Institutional Review Board has approved this document for use from 3/15/15 to 3/14/18 Protocol # 14-473 EX1503

Any data obtained in connection with this study will remain anonymous. We will protect your privacy and the data you provide by using SurveyMonkey to collect this information. We do not have access to your email address or IP address from your login to SurveyMonkey. Information collected through your participation may be used to fulfill and education requirement, published in a professional journal, and used to determine instructor training needs at the Alabama Real Estate Commission.

If you have questions about this study, please contact David Bowen at 334-353-0848 or Pat Anderson at 334-242-5544.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone at 334-844-5966 or email at IRBadmin@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK ON THE LINK BELOW. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

_____ _____

Investigator Date

The Auburn University Institutional Review Board has approved this document for use from _____ to _____. Protocol #14-473.

Link to Survey

The Auburn University Institutional Review Board has approved this document for use from 3/15/15 to 3/14/18 Protocol # 14-473 EX 1503

APPENDIX C

STATE OF ALABAMA

ETHICS COMMISSION

MAILING ADDRESS
P.O. BOX 4840
MONTGOMERY, AL
36103-4840

STREET ADDRESS
RSA UNION
100 NORTH UNION STREET
SUITE 104
MONTGOMERY, AL 36104

James L. Sumner, Jr.
Director

TELEPHONE [illegible]
FAX [illegible]
WEB SITE: [illegible]

RECEIVED
2014
ALABAMA REAL ESTATE
COMMISSION

July 11, 2014

Ms. Patricia Anderson
Executive Director
Alabama Real Estate Commission
1201 Carmichael Way
Montgomery, Alabama 36106

Dear Ms. Anderson:

I received your July 1st letter. I will not recite the contents of your letter; however, I will incorporate them by reference.

It would appear to me that this project would be a win-win situation. I see no problem with Mr Bowen undertaking this research; provided,

1) That it does not interfere with his job responsibilities with the Real Estate Commission and,
2) That he shares the results with the Commission for its use.

I hope this satisfactorily answers your questions.

Sincerely,

Hugh R. Evans, III
General Counsel

/td

APPENDIX D

An Exploratory Study of Alabama Real Estate Instructors' Learning Styles - Survey Instrument

DEMOGRAPHIC INFORMATION

1. What is your Instructor Type?
   ___ Continuing Education Instructor
   ___ Prelicense/Post License Instructor

2. What is your Gender?
   ___ Female
   ___ Male

3. What is your Age? _____

4. What is your Real Estate License Status?
   ___ Broker
   ___ Salesperson
   ___ I do not hold a real estate license

5. If you hold a real estate license, how many years do you have in the profession?
   ___ Five or less
   ___ Six to Ten
   ___ Eleven to Twenty
   ___ Twenty-one to Thirty
   ___ More than Thirty

6. How much experience do you have as a real estate instructor?
   ___ Five years or less
   ___ Six to ten years
   ___ Eleven to twenty years
   ___ Twenty-one to thirty years
   ___ More than thirty years

7. What is your highest level of formal education?
   ___ High school or GED
   ___ Two-year Degree
   ___ Bachelor's Degree
   ___ Master's Degree
   ___ Doctorate or Law Degree

Index of Learning Styles Questionnaire

Barbara A. Soloman & Richard M. Felder

For each of the 44 questions below select either "a" or "b" to indicate your answer. Please choose only one answer for each question. If both "a" and "b" seem to apply to you, choose the one that applies more frequently. When you are finished selecting answers to each question please select the submit button at the end of the form.

1. I understand something better after I
   - ☐ **(a)** try it out.
   - ☐ **(b)** think it through.
2. I would rather be considered
   - ☐ **(a)** realistic.
   - ☐ **(b)** innovative.
3. When I think about what I did yesterday, I am most likely to get
   - ☐ **(a)** a picture.
   - ☐ **(b)** words.
4. I tend to
   - ☐ **(a)** understand details of a subject but may be fuzzy about its overall structure.
   - ☐ **(b)** understand the overall structure but may be fuzzy about details.
5. When I am learning something new, it helps me to
   - ☐ **(a)** talk about it.
   - ☐ **(b)** think about it.
6. If I were a teacher, I would rather teach a course
   - ☐ **(a)** that deals with facts and real life situations.
   - ☐ **(b)** that deals with ideas and theories.
7. I prefer to get new information in
   - ☐ **(a)** pictures, diagrams, graphs, or maps.
   - ☐ **(b)** written directions or verbal information.
8. Once I understand
   - ☐ **(a)** all the parts, I understand the whole thing.
   - ☐ **(b)** the whole thing, I see how the parts fit.

9. In a study group working on difficult material, I am more likely to
   - ☐ **(a)** jump in and contribute ideas.
   - ☐ **(b)** sit back and listen.
10. I find it easier
   - ☐ **(a)** to learn facts.
   - ☐ **(b)** to learn concepts.
11. In a book with lots of pictures and charts, I am likely to
   - ☐ **(a)** look over the pictures and charts carefully.
   - ☐ **(b)** focus on the written text.
12. When I solve math problems
   - ☐ **(a)** I usually work my way to the solutions one step at a time.
   - ☐ **(b)** I often just see the solutions but then have to struggle to figure out the steps to get to them.
13. In classes I have taken
   - ☐ **(a)** I have usually gotten to know many of the students.
   - ☐ **(b)** I have rarely gotten to know many of the students.
14. In reading nonfiction, I prefer
   - ☐ **(a)** something that teaches me new facts or tells me how to do something.
   - ☐ **(b)** something that gives me new ideas to think about.
15. I like teachers
   - ☐ **(a)** who put a lot of diagrams on the board.
   - ☐ **(b)** who spend a lot of time explaining.
16. When I'm analyzing a story or a novel
   - ☐ **(a)** I think of the incidents and try to put them together to figure out the themes.
   - ☐ **(b)** I just know what the themes are when I finish reading and then I have to go back and find the incidents that demonstrate them.
17. When I start a homework problem, I am more likely to
   - ☐ **(a)** start working on the solution immediately.
   - ☐ **(b)** try to fully understand the problem first.
18. I prefer the idea of
   - ☐ **(a)** certainty.
   - ☐ **(b)** theory.

19. I remember best
- ☐ **(a)** what I see.
- ☐ **(b)** what I hear.

20. It is more important to me that an instructor
- ☐ **(a)** lay out the material in clear sequential steps.
- ☐ **(b)** give me an overall picture and relate the material to other subjects.

21. I prefer to study
- ☐ **(a)** in a study group.
- ☐ **(b)** alone.

22. I am more likely to be considered
- ☐ **(a)** careful about the details of my work.
- ☐ **(b)** creative about how to do my work.

23. When I get directions to a new place, I prefer
- ☐ **(a)** a map.
- ☐ **(b)** written instructions.

24. I learn
- ☐ **(a)** at a fairly regular pace. If I study hard, I'll "get it."
- ☐ **(b)** in fits and starts. I'll be totally confused and then suddenly it all "clicks."

25. I would rather first
- ☐ **(a)** try things out.
- ☐ **(b)** think about how I'm going to do it.

26. When I am reading for enjoyment, I like writers to
- ☐ **(a)** clearly say what they mean.
- ☐ **(b)** say things in creative, interesting ways.

27. When I see a diagram or sketch in class, I am most likely to remember
- ☐ **(a)** the picture.
- ☐ **(b)** what the instructor said about it.

28. When considering a body of information, I am more likely to
- ☐ **(a)** focus on details and miss the big picture.
- ☐ **(b)** try to understand the big picture before getting into the details.

29. I more easily remember
- ☐ **(a)** something I have done.
- ☐ **(b)** something I have thought a lot about.

30. When I have to perform a task, I prefer to
    - ☐ **(a)** master one way of doing it.
    - ☐ **(b)** come up with new ways of doing it.
31. When someone is showing me data, I prefer
    - ☐ **(a)** charts or graphs.
    - ☐ **(b)** text summarizing the results.
32. When writing a paper, I am more likely to
    - ☐ **(a)** work on (think about or write) the beginning of the paper and progress forward.
    - ☐ **(b)** work on (think about or write) different parts of the paper and then order them.
33. When I have to work on a group project, I first want to
    - ☐ **(a)** have "group brainstorming" where everyone contributes ideas.
    - ☐ **(b)** brainstorm individually and then come together as a group to compare ideas.
34. I consider it higher praise to call someone
    - ☐ **(a)** sensible.
    - ☐ **(b)** imaginative.
35. When I meet people at a party, I am more likely to remember
    - ☐ **(a)** what they looked like.
    - ☐ **(b)** what they said about themselves.
36. When I am learning a new subject, I prefer to
    - ☐ **(a)** stay focused on that subject, learning as much about it as I can.
    - ☐ **(b)** try to make connections between that subject and related subjects.
37. I am more likely to be considered
    - ☐ **(a)** outgoing.
    - ☐ **(b)** reserved.
38. I prefer courses that emphasize
    - ☐ **(a)** concrete material (facts, data).
    - ☐ **(b)** abstract material (concepts, theories).
39. For entertainment, I would rather
    - ☐ **(a)** watch television.
    - ☐ **(b)** read a book.

40. Some teachers start their lectures with an outline of what they will cover. Such outlines are

- ☐ **(a)** somewhat helpful to me.
- ☐ **(b)** very helpful to me.

41. The idea of doing homework in groups, with one grade for the entire group,

- ☐ **(a)** appeals to me.
- ☐ **(b)** does not appeal to me.

42. When I am doing long calculations,

- ☐ **(a)** I tend to repeat all my steps and check my work carefully.
- ☐ **(b)** I find checking my work tiresome and have to force myself to do it.

43. I tend to picture places I have been

- ☐ **(a)** easily and fairly accurately.
- ☐ **(b)** with difficulty and without much detail.

44. When solving problems in a group, I would be more likely to

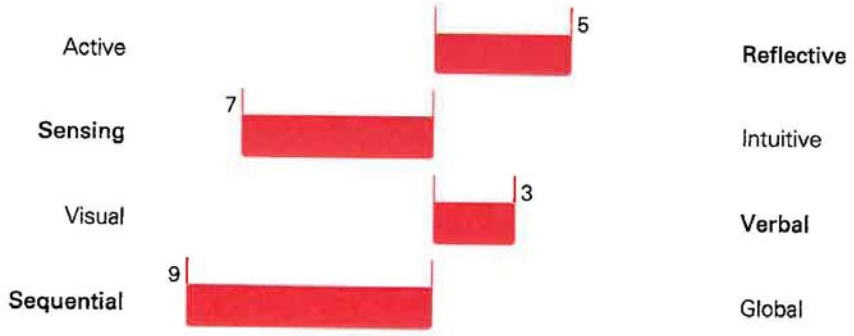
- ☐ **(a)** think of the steps in the solution process.
- ☐ **(b)** think of possible consequences or applications of the solution in a wide range of areas.

APPENDIX E

NC State Home RESOURCES

Questionnaire Results for **Student Sample Report:**

› Reflective: 5 › Sensing: 7 › Verbal: 3 › Sequential: 9



What do my results mean?

According to the model on which the ILS is based, there are four dimensions of learning style, with each dimension having two opposite categories (such as active and reflective). The reported score for a dimension indicates your preference for one category or the other.

If your score for a dimension is 1 or 3, you are fairly well balanced on the two categories of that dimension, with only a mild preference for one or the other.

If your score for a dimension is 5 or 7, you have a moderate preference for one category of that dimension. You may learn less easily in an environment that fails to address that preference at least some of the time than you would in a more balanced environment.

If your score for a dimension is 9 or 11, you have a strong preference for one category of that dimension. You may have difficulty learning in an environment that fails to address that preference at least some of the time.

APPENDIX F

Q8. I understand something better if I

Answer Choices	Responses	
(a) try it out.	68.63%	70
(b) think it through.	31.37%	32
	Answered	**102**
	Skipped	**0**

Q9. I would rather be considered

Answer Choices	Responses	
(a) realistic.	41.18%	42
(b) innovative.	58.82%	60
	Answered	**102**
	Skipped	**0**

Q10. When I think about what I did yesterday, I am most likely to get

Answer Choices	Responses	
(a) a picture.	79.41%	81
(b) words.	20.59%	21
	Answered	**102**
	Skipped	**0**

Q11. I tend to

Answer Choices	Responses	
(a) understand details of a subject but may be fuzzy about its overall	24.51%	25
(b) understand the overall structure but may be fuzzy about details.	75.49%	77
	Answered	**102**
	Skipped	**0**

Q12. When I am learning something new, it helps me to

Answer Choices	Responses	
(a) talk about it.	62.75%	64
(b) think about it.	37.25%	38
	Answered	**102**
	Skipped	**0**

Q13. If I were a teacher, I would rather teach a course

Answer Choices	Responses	
(a) that deals with facts and real life situations.	81.37%	83
(b) that deals with ideas and theories.	18.63%	19
	Answered	**102**
	Skipped	**0**

Q14. I prefer to get new information in

Answer Choices	Responses	
(a) pictures, diagrams, graphs, or maps.	55.88%	57
(b) written directions or verbal information.	44.12%	45
	Answered	**102**
	Skipped	**0**

Q15. Once I understand

Answer Choices	Responses	
(a) all the parts, I understand the whole thing.	49.02%	50
(b) the whole thing, I see how the parts fit.	50.98%	52
	Answered	**102**
	Skipped	**0**

Q16. In a study group working on difficult material, I am more likely to

Answer Choices	Responses	
(a) jump in and contribute ideas.	66.67%	68
(b) sit back and listen.	33.33%	34
	Answered	**102**
	Skipped	**0**

Q17. I find it easier

Answer Choices	Responses	
(a) to learn facts.	50.98%	52
(b) to learn concepts.	49.02%	50
	Answered	**102**
	Skipped	**0**

Q18. In a book with lots of pictures and charts, I am likely to

Answer Choices	Responses	
(a) look over the pictures and charts carefully.	72.55%	74
(b) focus on the written text.	27.45%	28
	Answered	**102**
	Skipped	**0**

Q19. When I solve math problems

Answer Choices	Responses	
(a) I usually work my way to the solutions one step at a time.	77.45%	79
(b) I often just see the solutions but then have to struggle to figure ou	22.55%	23
	Answered	**102**
	Skipped	**0**

Q20. In classes I have taken

Answer Choices	Responses

(a) I have usually gotten to know many of the students.	64.71%	66
(b) I have rarely gotten to know many of the students.	35.29%	36
	Answered	**102**
	Skipped	**0**

Q21. In reading nonfiction, I prefer

Answer Choices	Responses	
(a) something that teaches me new facts or tells me how to do somet	44.12%	45
(b) something that give me new ideas to think about.	55.88%	57
	Answered	**102**
	Skipped	**0**

Q22. I like teachers

Answer Choices	Responses	
(a) who put a lot of diagrams on the board.	37.25%	38
(b) who spend a lot of time explaining.	62.75%	64
	Answered	**102**
	Skipped	**0**

Q23. When I'm analyzing a story or a novel

Answer Choices	Responses	
(a) I think of the incidents and try to put them together to figure out th	74.51%	76
(b) I just know what the themes are when I finish reading and then I k	25.49%	26
	Answered	**102**
	Skipped	**0**

Q24. When I start a homework problem, I am more likely to

Answer Choices	Responses	
(a) start working on the solution immediately.	39.22%	40
(b) try to fully understand the problem first.	60.78%	62
	Answered	**102**
	Skipped	**0**

Q25. I prefer the idea of

Answer Choices	Responses	
(a) certainty.	73.53%	75
(b) theory.	26.47%	27
	Answered	**102**
	Skipped	**0**

Q26. I remember best

Answer Choices	Responses	
(a) what I see.	84.31%	86

(b) what I hear.	15.69%	16
	Answered	**102**
	Skipped	**0**

Q27. It is more important to me that an instructor

Answer Choices	Responses	
(a) lay out the material in clear sequential steps.	50.98%	52
(b) give me an overall picture and relate the material to other subject:	49.02%	50
	Answered	**102**
	Skipped	**0**

Q28. I prefer to study

Answer Choices	Responses	
(a) in a study group.	28.43%	29
(b) alone.	71.57%	73
	Answered	**102**
	Skipped	**0**

Q29. I am more likely to be considered

Answer Choices	Responses	
(a) careful about the details of my work.	50.00%	51
(b) creative about how to do my work.	50.00%	51
	Answered	**102**
	Skipped	**0**

Q30. When I get directions to a new place, I prefer

Answer Choices	Responses	
(a) a map.	73.53%	75
(b) written instructions.	26.47%	27
	Answered	**102**
	Skipped	**0**

Q31. I learn

Answer Choices	Responses	
(a) at a fairly regular pace. If I study hard, "I'll get it."	75.49%	77
(b) in fits and starts. I'll be totally confused and then suddenly it all "cl	24.51%	25
	Answered	**102**
	Skipped	**0**

Q32. I would rather first

Answer Choices	Responses	
(a) try things out.	46.08%	47
(b) think about how I'm going to do it.	53.92%	55

Answered		**102**
Skipped		**0**

Q33. When I am reading for enjoyment, I like writers

Answer Choices	Responses	
(a) clearly say what they mean.	42.16%	43
(b) say things in creative, interesting ways.	57.84%	59
Answered		**102**
Skipped		**0**

Q34. When I see a diagram or sketch in class, I am most likely to remember

Answer Choices	Responses	
(a) the picture.	65.69%	67
(b) what the instructor said about it.	34.31%	35
Answered		**102**
Skipped		**0**

Q35. When considering a body of information, I am more likely to

Answer Choices	Responses	
(a) focus on details and miss the big picture.	15.69%	16
(b) try to understand the big picture before getting into the details.	84.31%	86
Answered		**102**
Skipped		**0**

Q36. I more easily remember

Answer Choices	Responses	
(a) something I have done.	85.29%	87
(b) something I have thought a lot about.	14.71%	15
Answered		**102**
Skipped		**0**

Q37. When I have to perform a task, I prefer to

Answer Choices	Responses	
(a) master one way of doing it.	46.08%	47
(b) come up with new ways of doing it.	53.92%	55
Answered		**102**
Skipped		**0**

Q38. When someone is showing me data, I prefer

Answer Choices	Responses	
(a) charts or graphs.	61.76%	63
(b) text summarizing the results.	38.24%	39
Answered		**102**

Skipped		**0**

Q39. When writing a paper, I am more likely to

Answer Choices	Responses	
(a) work on (think about or write) the beginning of the paper and proc	59.80%	61
(b) work on (think about or write) different parts of the paper and ther	40.20%	41
Answered		**102**
Skipped		**0**

Q40. When I have to work on a group project, I first want to

Answer Choices	Responses	
(a) have "group brainstorming" where everyone contributes ideas.	59.80%	61
(b) brainstorm individually and then come together as a group to com	40.20%	41
Answered		**102**
Skipped		**0**

Q41. I consider it high praise to call someone

Answer Choices	Responses	
(a) sensible.	34.31%	35
(b) imaginative.	65.69%	67
Answered		**102**
Skipped		**0**

Q42. When I meet people at a party, I am more likely to remember

Answer Choices	Responses	
(a) what they looked like.	47.06%	48
(b) what they said about themselves.	52.94%	54
Answered		**102**
Skipped		**0**

Q43. When I am learning a new subject, I prefer to

Answer Choices	Responses	
(a) stay focused on that subject, learning as much about it as I can.	57.84%	59
(b) try to make connections between that subject and related subjects	42.16%	43
Answered		**102**
Skipped		**0**

Q44. I am more likely to be considered

Answer Choices	Responses	
(a) outgoing.	74.51%	76
(b) reserved.	25.49%	26
Answered		**102**
Skipped		**0**

Q45. I prefer courses that emphasize

Answer Choices	Responses	
(a) concrete material (facts, data)	69.61%	71
(b) abstract material (concepts, theories)	30.39%	31
	Answered	**102**
	Skipped	**0**

Q46. For entertainment, I would rather

Answer Choices	Responses	
(a) watch television.	58.82%	60
(b) read a book.	41.18%	42
	Answered	**102**
	Skipped	**0**

Q47. Some teachers start their lectures with an outline of what they will cove

Answer Choices	Responses	
(a) somewhat helpful to me.	43.14%	44
(b) very helpful to me.	56.86%	58
	Answered	**102**
	Skipped	**0**

Q48. The ideas of doing homework in groups, with one grade for the entire g

Answer Choices	Responses	
(a) appeals to me.	19.61%	20
(b) does not appeal to me.	80.39%	82
	Answered	**102**
	Skipped	**0**

Q49. When I am doing long calculations,

Answer Choices	Responses	
(a) I tend to repeat all my steps and check my work carefully.	65.69%	67
(b) I find checking my work tiresome and have to force myself to do it	34.31%	35
	Answered	**102**
	Skipped	**0**

Q50. I tend to picture places I have been

Answer Choices	Responses	
(a) easily and fairly accurately.	89.22%	91
(b) with difficulty and without much detail.	10.78%	11
	Answered	**102**
	Skipped	**0**

Q51. When solving problems in a group, I would be more likely to

Answer Choices	Responses	
(a) think of the steps in the solution process.	54.90%	56
(b) think of possible consequence or applications of the solution in a	45.10%	46
Answered		**102**
Skipped		**0**