LEARNING STYLES OF SELECTED AGRICULTURAL EDUCATION STUDENT TEACHERS AND PROFESSIONAL SERVICE INTERNS AT OKLAHOMA STATE UNIVERSITY

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CHAPTER I

INTRODUCTION

Each person exhibits individual characteristics when dealing with problems or learning situations daily. These characteristics or reactions reveal how the individual has been taught or learned to deal with life, new ideas and/or complex situations. Educational researchers are interested in these behavior patterns.

According to Dunn and Griggs (1988) and Reiff (1992) these behavior patterns have been differentiated into four different learning styles. The four learning styles as described by Dunn and Griggs (1988), are Accommodater, Assimilator, Diverger and Converger. Carrell and Moore (1993) and Kolb (1984) indicated that students can be grouped as having an active or a reflective learning style preference, while other students would rather take a hands on active or experimental approach to processing information and still others prefer a more reflective, observational approach.

Doebler and Eike (1979) emphasized in their study that learning style research has been conducted at an accelerating rate to determine the manner in which students learn in a formal environment. Claxton and Murrell (1987) implied that learning style could be an important element in the improvement of curricula and the higher education teaching process. Anderson and Adams (1992) strongly expressed:

> One of the most significant challenges that university instructors face is to be tolerant and perceptive enough to recognize learning differences in their

> students. Many instructors do not realize that students vary in the way they process and understand information. The notion that students' cognitive skills are identical at the collegiate level [suggests] arrogance and elitism by sanctioning one group's style of learning while discrediting the style of others (p. 19)

The learning-style inventory provides a general idea of how individuals view themselves as a learner and how they might make better career choices, solve problems, set goals, manage and/or deal with new situations. Several methods and instruments are available for determining learning styles. The Group Embedded Figures Test (GEFT) developed by Witkin, et al. (1971), Student Preferences for Instructional Techniques developed by Renzuli and Smith (1979), The National Association of Secondary School Principals (NASSP), Learning Style Profile developed by Keefe and Mouk (1986) and The Learning Style Inventory (LSI) modified and refined by Kolb (1984, 1985) were among those frequently cited in Learning Style research. In this study, Kolb's (1984, 1985) Learning Style Inventory (LSI) was used primarily because it was "user friendly," uncomplicated, straight forward and easy to score. Specifically, Kolb's (1984,1985) Learning-Style Inventory (LSI) divides the learning process into four stages. The four stages include concrete experience, reflective observation, abstract conceptualization and active experimentation. The concrete experience (CE) stage emphasizes personal involvement with people in everyday situations. People in this stage tend to rely more on feelings than on a systematic approach to problems. Reflective observation (RO) allows people to understand ideas and situations from different points of view, and relies on patience, objectivity, and judgement, but who would not necessarily take action, on any particular matter. The third stage, abstract conceptualization (AC), involves using logic and ideas rather than feelings to solve problems or understand situations. The fourth stage

involves an active approach to learning, active experimentation (AE), which allows an individual to experiment with influencing or changing situations by taking the most practical approach as opposed to simply watching a situation.

Statement of the Problem

The bottom line of any education endeavor involves learning enough to solve problems, make decisions and enhance the quality of life. Educators are often disappointed because they aren't accomplishing the goals they have set for themselves and a particular group of learners.

Educators and learners are often frustrated because learning outcomes have not been established and both teachers and students have little or no awareness of "how much should be taught and how well it should be learned." Furthermore, faculties were many times unaware how students prefer to learn. Recognition of students' learning style preferences would assist faculty in the development of instructional strategies which would make the information/material covered in class more useable for the student. Comprehension of learning style preferences among a particular group of learners would give teaching faculty an additional tool in assisting learners make the best use of their time in learning to make decisions, applying information and solving problems. In the long run, an understanding of learning styles would help faculty become more efficient teachers. However, more importantly, students completing the class or program could leave confident that they have the ability to apply/use the information presented.

Purpose of the Study

The purpose of this study was to determine the preferred learning styles of senior students enrolled in Agricultural Education at Oklahoma State University who were completing the student teaching experience and those entering Professional Service option internships at the close of the 1996 spring semester.

Objectives of the Study

To accomplish the purpose of this study, it was necessary to:

(1) Determine selected demographic characteristics of senior students completing student teaching and those entering Professional Service option internships.

(2) Determine the students individual learning styles.

(3) Compare differences in learning styles among students completing student teaching and those entering Professional Service option internships.

Scope of the Study

The scope of this study included seniors currently enrolled in Agricultural Education at Oklahoma State University who were completing the student teaching experience and those entering Professional Service option internships at the close of the 1996 spring semester.

Definition of Terms

The following definitions were presented as they applied to this study.

Student Teaching Experience – Involves 12 week simulated professional teaching experience conducted in accredited secondary Agricultural Education programs.

Professional Service Internship – Involves a 12 professional work experience in a variety agribusiness, production agriculture, government, commodity groups, agricultural lending agencies and/or non-formal education entities.

Learning-Style Inventory (LSI) – Evaluates the way a person learns and how they deal with day to day situations.

Concrete Experience (CE) – This stage of the learning cycle emphasizes personal involvement with people in everyday situations.

Reflective Observation (RO) – In this stage of the learning cycle, people view situations and ideas from different points of view.

Abstract Conceptualization (AC) – In this stage, learning involves using logic and ideas, rather than feelings, to understand problems or situations.

Active Experimentation (AE) – learning takes an active form by experimenting with situations to change the outcome.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of this chapter was to present an overview of related literature relevant to learning style preferences. The presentation of this review was divided into four major areas and a summary to facilitate clarity and organization. The areas addressed were: 1) An Overview of Learning Styles, 2) Measures of Learning Style Preference, 3) Kolb's (1984, 1985) Learning Style Inventory (LSI), and 4) Learning Styles of Adult Educators, and 5) a summary.

An Overview of Learning Style

Cox and Zamundo (1993) became increasingly interested in the question of learning styles and the manner which described "the way each person absorbs and retains information and/or skills (p. 5)." In the review of literature concerning learning styles, Cox and Zamudio (1993) quoted Oxford (1989), Hodges (1983) and Ewing and Young (1992) emphasizing . . .

> Learning styles affect what a student learns as well as how a student learns (p. 241). Students often learn faster and easier when they are taught through their own individual learning style (p. 18). Teachers often teach in one style, overlooking variation in their students learning styles (p. 120).

Cox and Zamundio (1993) in applying these findings to Agricultural Education stated the importance of learning style research was "to reveal more about how students learn, as well as how teachers teach" (p. 5). Research efforts completed at Ohio State University by Cano, Garton, and Raven (1992); Montana State University by Raven, Cano, Garten and Shelhamer (1993); and at Pennsylvania State University, Rollins and Scanlon (1989) also addressed learning style preferences among agriculture students to not only determine differences in learning style but to develop strategies to improve teaching.

Measures of Learning Style Preference

There are several ways to determine learning styles. Four of the most common include:

- The Group Embedded Figures Test (GEFT) developed by Witkin, Oltman, Raskin and Karp (1971), is a perceptual test which does not use words. However, this in itself gives the GEFT an advantage of working well across cultures. Marrison and Frick (1994) used the GEFT test in examining the use of traditional lecture and computer multimedia instruction among undergraduate students in the School of Agriculture at a major land-grant university. The GEFT technique was also used by Torres and Cano (1995)in examining the critical thinking abilities of students in a college of agriculture.
- The National Association of Secondary School Principals (NASSP) Learning Style Profile (LSP) developed by Keefe and Monk (1986) was used among students of junior high school age and older who were eligible

to use this testing program. It is based on self-reporting , and grouping learning styles into the categories of cognitive style, perceptual response, and instructional preference. Rollins and Scholl (1992) used this technique to study 4-H members in Pennsylvania.

- The Learning Styles Inventory developed by Renzuli and Smith (1979) involved A Measure of Student Preferences for Instructional Techniques which used 65 items to determine the kind of teaching techniques students prefer. The teaching techniques included projects, drills, peer teaching, discussion, teaching games, independent study, program instruction, lecture, and simulation.
- The Learning Style Inventory (LSI) that was put together by Kolb (1984, 1985) measures how concrete or abstract an individual is in learning style and/or how active or reflective.

Kolb's (1984, 1985) Learning Style Inventory

Kolb's (1984, 1985) Learning Style Inventory (LSI) is in part an outgrowth of the work of Piaget (1932), "who has shown in descriptive studies of infants, children and adolescents the interrelation of intellectual growth with active experimentation and direct concrete experience. Kolb (1984, 1985), along with many other theorists such as, Kohlberg (1976) in his theory of the development of moral judgement and Perry's (1970) theory of intellectual development used Piaget's (1972) concept that intellectual development begins in children as very concrete, egocentric learning, but gradually becomes more abstract as well as learning to internalize as they mature and develop.

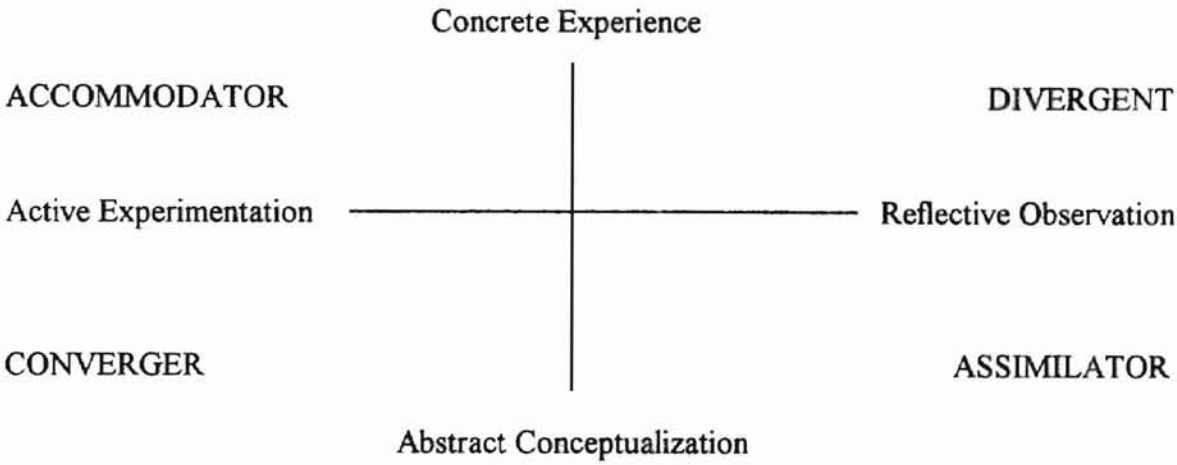
Kolb's (1984, 1985) Learning Style Inventory proved to be a reliable approach to data collection with target populations for several reasons. First, it works well with adults, and the population for this study consisted of only college students near the end of their undergraduate programs. Also the Learning Style Inventory was short and easy to administer and self scoring.

Kolb's (1984, 1985) Learning Style Inventory has been widely used to assess student learning styles. In 1988 and 1989 Adams and Zhou used Kolb's (1984, 1985) inventory to study the learning style of 219 undergraduates (Adams and Zhou 1990). They described Kolb's model as follows:

> The core of Kolb's experiential learning model is a four stage cycle—from Concrete Experience (CE) through Reflective Observation (RO) and Abstract Conceptualization (AC) to Active Experimentation (AE)—which represents the transformation of experience into concepts and behavior, provides a basis for identifying different orientations to learning or learning types, and demystifies theory by rooting it firmly in the concrete and reflective components of learning (p.17).

In 1985 the Learning Style Inventory was revised into a "twelve-item rank-order forced response questionnaire designed to provide information on a subject's learning preference." Each item on this survey instrument had four possible answers, reflecting the four learning stages—Concrete Experience (feeling), Reflective Observation (observation) Abstract Conceptualization (thinking) and Active Experimentation (doing). Taken together, the scores concerning the survey items indicated the respondent's learning style preference in each of Kolb's four primary learning orientations: CE, RO, AC, and AE. According to Adams and Zhou (1990) "The Learning Style Inventory also measured two combination scores: abstractness/concreteness (AC-CE), and action/reflection (AE-RO)" (p. 17-18).

Results of Kolb's (1984, 1985) Learning Style Inventory were sometimes presented in the form of a graph with two dimensions, dividing learning styles into four quadrants as follows:



According to Barkley (1995) and Higgs et al. (1995) learners in each of these four quadrants have certain distinctive characteristics.

> Convergent. These learners are more comfortable with technical tasks and like single-answer learning situations. They like problem-solving, decision-making, or applying ideas.
> Divergent. These learners like to work on the big picture, using their imagination in brainstorming and finding uncommon solutions.
> Assimilation. Learners of this type like to work with ideas, concepts, and ideas which have already been researched.
> Accommodating. Learners in this quadrant prefer to take risks, and to be active, using other people as a source of "ideas" of people (p. 10).

As Barkley (1995) pointed out, these learning styles can be used in the classroom or other teaching situations to maximize student learning.

Learning Styles of Adult Educators

A study of Cooperative Extension Agents (1993) by Rollins and Yoder (1993) expanded the use of Kolb's (1984, 1985) model to the field of adult learning preferences when they initiated their study of Extension field staff in Pennsylvania. The purpose Rollins and Yoder's (1993) study was to describe the learning style preferences among county field staff members. They believed that this information would help them

> in designing and delivering in-service education and professional development activities that enhance job performance, increase the capacity for teamwork, improve the teaching and learning process, and increase individual ability for working with diverse clientele groups (p. 19).

Rollins and Yoder (1993) found that of the 199 agents surveyed, the majority (57 percent) of the staff members were male and were assigned to the program areas of agriculture, Four-H/Youth Development work and County Directors. Furthermore, 93 percent of the respondents in Family Living were female.

Looking at the learning styles of the agents, the Rollins and Yoder (1993) found that most of the Family Living agents were in the Active Experimenter/Concrete Experience quadrant. They termed this group as accommodators. Twenty-six percent of the Agriculture program specialists and County Directors were in the Abstract Conceptualization/Active Experimenter quadrant, which the researchers described as Convergers. In addition, 18 percent of the agents revealed that their learning preference combination was in the Concrete Experience/Reflective Observation quadrant and were best described as Divergers. The remaining 27 percent were designated as Assimilators.

Summary

Hodges (1983) stated "students learn faster and easier when taught through their own individual learning style" (p. 18). Oxford (1989) determined "learning styles affect what a student learns as well as how a student learns," an indicator that more learning style research is needed in many areas (p. 241). The determination of learning styles may allow teachers to do a more effective job of presenting the subject matter and assisting students in becoming more dynamic learners.

Determination of learning style may be accomplished by a variety of methods. The four most common include the Group Embedded Figures Test (GEFT), The National Association of Secondary School Principals (NASSP), Renzuli and Smith's (1979) Learning Styles Inventory and Kolb's ((1984, 1985) Learning-Style Inventory (LSI).

The Group Embedded Figures Test (GEFT) developed by Witkin, Oltman, Raskin and Karp (1971) is a perceptual test and does well across cultures. The National Association of Secondary School Principals (NASSP) Learning Style Profile (LSP) was a product of Keefe and Monk (1986) and based on self-reporting and grouping learning styles into categories of cognitive style, perceptual response and instructional preference. Renzuli and Smith (1979) use 65 items to determine the teaching techniques preferred by students using "The Learning Style Inventory which was a measure of student preference for instructional techniques."

The use of Kolb's (1984, 1985) Learning Style Inventory (LSI) was a simple, accurate method to determine the learning styles of large groups/audiences. Faculty who have an interest in learning style research are usually looking for opportunities to help their

students become more effective and efficient learners. Knowledge of learning styles allows the instructor to change methods of teaching to better meet the needs of students. Observation of each of the four learning styles leads one to believe there are major differences among learners and their preferences for learning information and/or a skill. Many learners conduct related projects for similar reasons but accomplish them in different manner. If the learning style is known then faculty have an opportunity to change and/or modify teaching methods and assist students in becoming more capable learners.

CHAPTER III

DESIGN AND PROCEDURE

Introduction

The purpose of this chapter was to describe the methodology utilized in conducting the research. The procedures were for the most part prescribed by the intent and purpose of the study which was to determine the learning styles of student teachers and Professional Service option students enrolled in Agricultural Education at Oklahoma State University during 1996 the spring semester. The specific objectives of the study were to determine:

(1) Selected demographic characteristics of the senior students completing student teaching and those entering Professional Service option internship program.

(2) The students' individual learning style.

(3) Differences in learning styles among students completing the student teaching experience and those entering Professional Service option internships.

Population

The population of this study included 40 Agricultural Education students who participated in the final Student Teacher Seminar and Professional Service option students enrolled in Non-Formal Education Methods in Agriculture (AGED 4203) at Oklahoma State University during the 1996 spring semester. Within the total population of 40, 27 student teachers and 13 Professional Service interns participated in this study.

Instrumentation

Two instruments were used in this study to assess information and conduct a learning styles inventory among student teachers and Professional Service students enrolled in Agricultural Education at Oklahoma State University during the 1996 spring semester. The first was a survey developed by the author to obtain demographic information about the respondents. The survey instrument addressed gender, age, ethnicity, educational background, membership in high school agricultural student organizations and agricultural experience/background.

Kolb's (1984, 1985) Learning-Style Inventory (LSI) was the primary instrument used to determine student learning styles. The Learning-Style Inventory (LSI) determined and evaluated how individuals learn and deal with ideas and day-to-day situations in life. The Learning-Style Inventory consisted of twelve statements/items with four possible responses. The respondents ranked each item with regard to how they felt they learned best, contrasted to the least preferred learning approach when learning something new. A four number rating scale was employed to report the range in learning preferences in sequential order from most preferred to least preferred. The number "four" described the

statement which the respondents rated as their primary method of learning, while the number "one" was rated as the least preferred approach to learning. The other two responses, "three" and "two" ranked accordingly. Numbers "four" and "one" were used to rank the statement describing the approach from best to least suited method for the respondent to learn.

The format of Kolb's (1984, 1985) Learning Style Inventory (LSI) consisted of 12 items which contained two components. Four stems, "When I learn," "I learn best when," "When I am learning," and "I learn by" were used to begin the selected response. The "When I learn " stem was used four times throughout the Learning Style Inventory. It was the stem for response one, five, eight and 11. "I learn best" followed "When I learn." It was the stem for items two and 12 except when "When I learn " served as the stem for item eight. The "I learn best when" descriptor functioned as the stem for items seven and nine, the "When I am learning" stem dealt with items was three, six and ten. "I learn by" was used once as the stem for item four.

In addition to the "learning stems" preceding each respective response, each column reflected a specific learning style preference. The total score in column one, Concrete Experience (CE), reflected a learning preference for relying on one's feelings, personal involvement and sensitivity to people as well as the ability to be open-minded and learning from specific experiences, while Reflective Observation (RO) reflected the total score in column two which revealed that people understand ideas and situations from different points of view. The Reflective Observation (RO) column also indicated a reliance on learning preferences which involves ones inclination toward patience, objectivity and careful judgement but not necessarily taking action. A high score in the Reflective

Observation (RO) also disclosed tendencies for ascertaining the meaning of things. Abstract Conceptualization (AC), indicative of the total score in the third column, revealed one's propensity toward learning by thinking through analyzing ideas, systematic planning and acting on intellectual understanding. The fourth column, Active Experimentation (AE), revealed preferences toward "learning by doing" which typically involved strengths in getting things done, risk taking and influence people through action.

The totals of the four columns relate to the four stages in the cycle of learning. The four learning modes in the cycle as has been previously alluded include, from left to right across the bottom of the Learning-Style Inventory (LSI), Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC) and Active Experimentation (AE). To determine the learning style describing the respondents, the column scores CE, RO, AC and AE are subtracted to get two combination scores indicative of differences between Ac and CE which equals (=) AC-CE, while AE minus (-) RO equals AE-RO. A positive score on the AC-CE scale indicates a score which tends to be more abstract, while a negative score is indicative of a stronger preference toward Concrete Experience (CE). Likewise, a positive score on the AE-RO scale expresses a stronger tendency toward Active Experimentation (AE), while a negative score tends to reveal a strong preference toward Reflective Observation (RO). Marking the two combination scores, AC-CE and AE-RO, on the two lines of the Learning-Style Type Grid and plotting their interception provides an indication of the respondent's learning style preference. The four quadrants of the Learning-Style Type Grid represent four dominant learning styles; Accommodators, Divergers, Convergers and Assimilators.

Kolb's (1984, 1985) Learning- Style Inventory was printed and published by McBer & Company, Boston, Massachusetts.

Institutional Review Board

Federal regulations and Oklahoma State University policy require review and approval of all research studies that involve human subjects before investigators begin their research. The Oklahoma State University Office of University Research Services and the Institutional Review Board conducted this review to protect the rights and welfare of the human subjects involved in biomedical and behavioral research. In compliance with the aforementioned policy, this study received the proper surveillance and was granted permission to continue under approval number AG-96-025.

Collection of Data

Survey Instruments were distributed to the total population during the Student Teachers' Final Seminar and Professional Service intern students' pre-internship class (AGED 4203) April 30, 1996. After completing the Kolb's (1984, 1985) Learning Style Inventory (LSI) and the demographic survey instrument, students returned data sheets to the researcher and the data were analyzed.

Analysis of Data

Since all members of the population participated, descriptive statistics were selected to use in describing the results and findings of this study. Arithmetic means,

frequency distributions, percentages, ranges and overall rankings were used to report results of this study.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

The purpose of this chapter was to report the results from the questionnaire soliciting selected student demographics and the results of Kolb's (1984, 1985) Learning-Style Inventory (LSI) instrument used to conduct the study. The purpose of the study was to determine the preferred learning styles of senior students enrolled in Agricultural Education who were completing Student Teaching and those entering Professional Service option internships at Oklahoma State University during the 1996 spring semester.

A total of 40 (100%) senior students enrolled in Agricultural Education who were completing their student teaching or entering Professional Service option internships at the end of the 1996 spring semester participated in the survey.

Population

The population of this study included the 27 Agricultural Education students who participated in the final Student Teacher Seminar and 13 Professional Service option interns enrolled in AGED 4203 at Oklahoma State University during the 1996 spring semester. Twenty-seven student teachers and 13 Professional Service option students participated in this study revealing the total population of 40 (100%).

Findings of the Study

In observing the data in Table I, it was found that out of a total of 40 student participants 34 (85%) were male. The data further revealed 24 (88.9%) student teachers and 10 (76.9%) of the Professional Service students were male. Six female students, on the other hand, made up 15 percent of the total population, whereas further delineation revealed three (23.1%) were Professional Service option participants and three (11.1%) were student teachers.

TABLE I

A DISTRIBUTION OF STUDY RESPONDENTS BY GENDER

	Distribution by Group					
	Teachers		Professional Service Students		Total	
Gender	N=27	Percent (%)	N=13	Percent(%)	N=40	Percent (%)
Female	3	11.1	3	23.1	6	15.0
Male	24	88.9	10	76.9	34	85.0
Total	27	100.0	13	100.0	40	100.0

The data shown in Table II indicated that out of 40 total respondents, 14 (35%) were 22 years of age and 12 (30%) 21 years of age. Furthermore, nine (22.5%) were between 24 and 37 years of age. A total of four (10%) student participants were 23 years

of age, while one (2.5%) was 20 years of age. The average age for all (40) student participants was 22.68 years. Additional detail revealed in Table II disclosed that 18 (66.7%) of the student teachers were 21 to 22 years of age, while eight (51.5%) of the Professional Service option student participants were 21 and 22 years of age respectively.

TABLE II

A DISTRIBUTION OF STUDY RESPONDENTS BY AGE

	Distribution by Group					
	Student teachers		Professional Service Students		Total	
Age	N=27	Percent (%)	N=13	Percent (%)	N=40	Percent(%)
20	-	-	1	7.7	1	2.5
21	7	25.9	5	38.5	12	30.0
22	11	40.8	3	23.0	14	35.0
23	3	11.1	1	7.7	4	10.0
24	3	11.1	2	15.4	5	12.5
25	2	7.4	-	-	2	5.0
28	-	-	1	7.7	1	2.5
37	1	3.4	-	-	1	2.5
Total	27	100.0	13	100.0	40	100.0

Mean Age = 22.68 years

The distribution of study respondents by ethnicity in Table III revealed that 36 (90%) of the 40 students were Caucasian, whereas four (10%) considered themselves Native American. When broken down by major option 25 (92.6%) of the 27 student

teachers stated they were Caucasian, while 11 (84.6%) of the Professional Service option majors also indicated their racial background was Caucasian.

TABLE III

A DISTRIBUTION OF STUDY RESPONDENTS BY ETHNICITY

	Distribution by Group					
	Student Teachers		Professional Service Interns		Total	
Ethnicity	N=27	Percent(%)	N=1	Percent (%)	N=40	Percent(%)
Caucasian	25	92.6	11	84.6	36	90.0
Native American	2	7.4	2	15.4	4	10.0
Total	27	100.0	13	100.0	40	100.0

Inspection of data in Table IV disclosed that 24 (60%) students out of a total of 40 student respondents, transferred to Oklahoma State University from a two-year college. While 11(27.5%) received all of their higher education at OSU and five (12.5%) student respondents transferred to OSU from a four-year college. It was further shown that the number of Professional Service option students, 11 (84.6%), was almost equal to the number of student teachers, 13 (48.2%) who transferred from a two-year college. From

the data it was learned that almost 4.5 times as many student teachers (nine), received all of their higher education at OSU, as compared to two Professional Service option students.

TABLE IV

A DISTRIBUTION OF STUDY RESPONDENTS BY EDUCATIONAL BACKGROUND

Educational Background	Distribution by Group: Student Teachers		Professional Service Students		Total	
	N=27	Percent(%)	N=13	Percent (%)	N=40	Percent(%)
Transferred to OSU from a two-year college	13	48.2	11	84.6	24	60.0
All higher education at OSU	9	33.3	2	15.4	11	27.5
Transferred to OSU from a four-year college	5	18.5	-	-	5	12.5
Total	27	100.00	13	100.00	40	100.00

Analysis of data in Table V, revealed that 39 (97.5) of the 40 student respondents were active in high school agricultural student organizations, either 4-H or FFA. Twenty-eight (71.8%) student respondents revealed they were only members of FFA. When

compared by major, the study results indicated that 20 (74.1 %) of the student teachers and eight (66.7%) of the Professional Service option students were only members of FFA. While on the other hand, three (25.0%) of the Professional Service option and seven (25.9%) student teachers revealed they were members of both 4-H and FFA. Only one (8.3%) Professional Service option student indicated membership in 4-H only and there were no responses for other high school agricultural student organizations.

TABLE V

A DISTRIBUTION OF STUDY RESPONDENTS BY MEMBERSHIP IN HIGH SCHOOL AGRICULTURAL STUDENT ORGANIZATIONS

High School Agricultural Student Organization	Distribution by Group: Student Teachers		Professional Service Students		Total	
	N=27	Percent(%)	N=12*	Percent (%)	N=39	Percent(%)
4-H only	-	-	1	8.3	1	2.6
FFA only	20	74.1	8	66.7	28	71.8
Both 4-H and FFA	7	25.9	3	25.0	10	25.6
Total	27	100.00	12	100.00	39	100.00

The data shown in Table VI addressed prior agricultural experience and the background of study respondents. Of the 40 study respondents, the large majority (60%)

had both agribusiness and production agriculture experience. Eight respondents (20 %) indicated "livestock only" experience, while another group of eight (20 %) had "both crop and livestock" experience. Six (22%) student teachers had a "livestock only" experience, while 18 (66%) had "both production agriculture and agribusiness" experience, while eight (38.5%) Professional Service students indicated "both crops and livestock" and six (46.1%) disclosed they had both agribusiness and production agriculture" experience. None of the respondents indicated "agribusiness only" or "crops only" experience/ background.

TABLE VI

A DISTRIBUTION OF STUDY RESPONDENTS BY AGRICULTURAL EXPERIENCE

Experience/ Background	Distribution by Group: Student Teachers		Professional Service Students		Total	
	N=27	Percent(%)	N=13	Percent (%)	N=40	Percent(%)
Livestock Only	6	22.2	2	15.4	8	20.0
Both Crops and Livestock	3	11.1	5	38.5	8	20.0
Both Agribusiness and Production Agriculture	18	66.7	6	46.1	24	60.0
Total	27	100.0	13	100.0	40	100.0

Kolb's (1984, 1985) Learning-Style Inventory

The data shown in Table VII thru Table X depicted summaries of the 12 item Kolb's (1984, 1985) Learning-Style Inventory (LSI). Each of the 12 statements began with one of four descriptions "When I learn," "I learn best," "When I am learning," and "I learn by." Four possible endings for the statement follow the opening phrase representing the four stages of the learning cycle: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC) and Active Experimentation (AE). Respondents ranked the statement endings according to personal preference with the primary learning preference receiving a ranking of "four" and the least preferred a "one." The column totals represented the prevalence of each learning style. The number of responses for a specific statement preference were multiplied by the value for that response. For example, 10 respondents revealed Concrete Experience (CE) as their primary learning style. Ten, the number of respondents, would by multiplied by four, the weighted response, summing to a column total of 40. The same calculations were completed for the remaining responses concerning that statement. The four rated responses were summed, divided by the total number of respondents for the group which included 27 student teachers and 13 Professional Service interns for a total of 40 to obtain the mean response for that specific portion of the learning style inventory, i.e., Concrete Experience (CE).

The data in Table VII revealed the Professional Service interns were more favorably aligned with the Concrete Experience (CE) stage in their cycle than were the student teachers. The calculated mean for Professional Service interns was 31.39 as compared to a mean value 27.66 for the student teachers. The total study group received a

mean value of 28.89 for the Concrete Experience (CE) stage of the learning cycle. The first statement "When I learn I like to deal with my feeling" had a Professional Service intern mean of 2.54 as compared to the student teacher mean of 1.89, while the total group had a 2.10 mean. "I learn best when I trust my hunches" was the second statement used to determine the Concrete Experience (CE) portion of the learning style which had a 2.85 mean for the Professional Service interns, while the student teachers had a mean score of 2.07. The tabulated mean for the total study group was determined as 2.33. The total group mean for the third statement was 2.35 "When I am learning I have strong feelings and reactions." Student teachers had a mean value of 2.19 as compared to 2.69 for the Professional Service interns.

"I learn by feeling" stimulated a mean of 2.77 from the Professional Service interns, while the student teachers reflection on this statement/response revealed a mean score of 1.85 as compared to a mean score of 2.15 for the total group. The fifth statement for the study group was "When I learn I am open to new experiences" had a slightly higher preference among the Professional Service interns when compared with student teachers by mean score of 2.85 to 2.48 respectively. Furthermore, 2.60 was the mean score for the complete study group. This was followed by "When I am learning I am an intuitive person" which was the first of two statements where student teachers had a higher mean scores than the Professional Service interns. The mean score for the student teachers was 2.44 as compared to a 2.31 mean score for the Professional Service interns and 2.40 as a mean score for the total group.

The highest mean score determined relative to the Concrete Experience (CE) stage in the learning cycle was 3.00 achieved by the Professional Service interns responding to

"I learn best from personal relationships." Student teachers followed with a mean of 2.63, while the combined group had mean score of 2.75.

The means derived for the statement "When I learn I feel personally involved in things" were similar for the Concrete Experience (CE) stage among both student teachers and Professional Service interns. The Professional Service interns had mean score 2.38 while the student teachers revealed a mean score of 2.33. A mean value 2.46 was reflected by the Professional Service interns for the statement "I learn best when I rely on my feelings," while the student teachers had a mean score of 2.30 for the Concrete Experience (CE) stage in the learning cycle with the mean score for the combined groups was 2.35. Item ten, "When I am learning I am an accepting person" revealed a mean score of 2.26 and 2.46 for the student teachers and Professional Service interns respectively. Concerning the statement, "When I learn I get involved" a mean score of 2.26 was determined for the student teachers, while a mean score of 2.54 was derived for the Professional Service students. A mean score of 2.89 for student teachers and 2.54 for the Professional Service students was determined for the statement/response "I learn best when I am receptive and open minded." Furthermore the total group had a mean score of 2.78 for item 12, the last statement concerning the Concrete Experience (CE) stage of Kolb's (1984, 1985) Learning Style Inventory (LSI).

Professional Service students had higher mean scores for 10 of the 12 statements regarding the Concrete Experience (CE) stage of the learning cycle of Kolb's Learning Style Inventory (LSI). Professional Service interns means were higher on all of the "When I learn," three-fourths of the "I learn best," and half of the "When I am learning" statements. They also had a higher mean score on the "I learn by" statement/response.

Student teachers mean scores were higher for the "I learn best" and "When I am learning" statement/responses.

TABLE VII

A COMPARISON OF RESPONDENT PREFERENCES RELATED TO THE CONCRETE EXPERIENCE (CE) STAGE OF THE LEARNING CYCLE

	Mean Response by Group		
Statements	Student Teachers (N=27)	Professional Service Interns (N=13)	Total (N=40)
When I learn I like to deal with my feelings.	1.89	2.54	2.10
I learn best when I trust my hunches.	2.07	2.85	2.33
When I am learning, I have strong feelings and reactions.	2.19	2.69	2.35
I learn by feeling.	1.85	2.77	2.15
When I learn, I am open to new experiences.	2.48	2.85	2.60
When I am learning, I am an intuitive person.	2.44	2.31	2.40
I learn best from personal relationships.	2.63	3.00	2.75
When I learn, I feel personally involved in things.	2.33	2.38	2.35
I learn best when I rely on my feelings.	2.30	2.46	2.35
When I am learning, I am an accepting person.	2.33	2.46	2.38
When I learn, I get involved.	2.26	2.54	2.35
I learn best when I am receptive and open minded.	2.89	2.54	2.78
Total	27.66	31.39	28.89

The data in Table VIII revealed that two-thirds of the student teacher mean scores for the 12 items included in Kolb's (1854, 1985) Learning-Style Inventory (LSI) was higher than the Professional Service interns mean scores. The summed mean score 28.85 for student teachers compared to 28.32 by Professional Service interns referred to their preference for the Reflective Observation (RO) stage of Kolb's (1984, 1985) Learning Style Inventory (LSI). The combined mean score for Reflective Observation (RO) was 28.62.

Student teachers response to the Reflective Observation (RO) stage of Kolb's (1984. 1985) Learning Style Inventory (LSI) had the highest mean score on all of the "I learn best" statement/response, 50 percent of the "When I Learn" and 50 percent "When I am learning" statements/response. They also had the high mean score for the Reflective Observation (RO) item "I learn by."

The initial item, "When I learn I like to watch and listen," on the Reflective Observation (RO) column was shown to be the preference of student teachers with a mean score of 2.59 in relation to the mean score 2.54 representing Professional Service interns. The total group mean score 2.58 reflected the first statement/response. A mean score of 2.67 was reflected by the student teachers for item "I learn best when I listen and watch carefully" while the total group mean score for this item was 2.58 and Professional Service interns mean score was 2.38.

The third statement/response, "When I am learning I am quiet and reserved" had an overall group mean score of 2.53 as compared to Professional Service intern mean score of 2.31 and a student teacher mean score value of 2.63. The Reflective Observation (RO) "I learn by watching" item reflected a mean score by student teachers of 2.70

compared to the Professional Service intern mean score 2.31. The composite group reflected mean score of 2.58 for the statement/response.

The first, Reflective Observation (RO) statement Professional Service interns deemed a preference for was "When I learn I look at all sides of issues" with a calculated mean score of 2.31. Student teacher evaluation of this item produced a respondent preference mean score 2.26, while the mean score for the total group was 2.28. The second Reflective Observation (RO) in Kolb's (1984, 1985) Learning-Style Inventory (LSI) statement, "When I am learning I am an observing person," was ranked higher by Professional Service interns than the student teacher group. A mean score of 2.85 was calculated for the Professional Service interns, while the student teacher preference for this learning style item revealed a mean score 2.22 compared to a total group mean score of 2.43.

The calculation of a 2.22 mean score reflected student teacher preferences for the statement/response "I learn best from observing." Professional Service interns were following close with a mean score of 2.00, while the total group derived a mean score of 2.15. The Reflective Observation (RO) item "When I learn I take my time before acting," eighth statement/response in sequence, in the Reflective Observation (RO) column of Kolb's (1984, 1985) Learning-Style Inventory (LSI) was the third item in which the Professional Service interns reflected a higher mean score (2.46) than student teachers (2.11) for this statement/response with a combined mean score of 2.23 for the respondents as a group.

The ninth statement/response of the Reflective Observation (RO) stage "I learn best when I rely on my observations" reflected a mean score of 2.41 for student teachers,

while a mean score of 2.15 was calculated for Professional Service interns compared to an overall mean value of 2.33 for the total group. A mean score of 2.52 for the item "When I

TABLE VIII

A COMPARISON OF RESPONDENT PREFERENCES RELATED TO THE REFLECTIVE OBSERVATION (RO) STAGE OF THE LEARNING CYCLE

	Mean Response by Group		
Statements	Student Teachers (N=27)	Professional Service Interns (N=13)	Total (N=40)
When I learn I like to watch and listen.	2.59	2.54	2.58
I learn best when I listen and watch carefully.	2.67	2.38	2.58
When I am learning, I am quiet and reserved.	2.63	2.31	2.53
I learn by watching.	2.70	2.31	2.58
When I learn, I look at all sides of issues.	2.26	2.31	2.28
When I am learning, I am an observing person.	2.22	2.85	2.43
I learn best from observing.	2.22	2.00	2.15
When I learn, I take my time before acting.	2.11	2.46	2.23
I learn best when I rely on my observations.	2.41	2.15	2.33
When I am learning, I am a reserved person.	2.52	2.31	2.45
When I learn, I get like to observe.	2.59	2.38	2.53
I learn best when I am careful.	1.93	2.31	2.05
Total	28.85	28.31	28.72

learn I am an observing person" was reflected by student teachers while Professional Service interns comparative mean score was 2.31. Furthermore the total groups mean score of 2.45 completed the data for this Reflective Observation (RO) stage.

"When I learn I like to observe" was the next to last response for this section of Kolb's (1984, 1985) Learning Style Inventory (LSI). Student teachers favorably reflected a mean score of 2.59 while Professional Service interns had a mean score of 2.38 compared to the total group with a mean score of 2.53.

The last statement on the Reflective Observation (RO) stage "I learn best when" was their fourth highest preference with a mean score of 2.46, compared to a 1.93 for student teachers and a mean score of 2.05 for the total group.

The study group's learning style preferences related to Abstract Conceptualization (AC) revealed in the data of Table IX. Seventy- five percent of the Professional Service interns had higher mean scores for the statements "When I learn" and "I learn best" the student teachers.

Professional Service students demonstrated their preference for the Abstract Conceptualization (AC) by their response to the first item "When I learn I like to think about ideas" with a mean score of 2.54 compared to 2.37 calculated for student teachers. Meanwhile, the total group of study respondents reflected their response to this statement/response with a mean score 2.43. The second "When I learn" statement/ response "When I learn I like to analyze things, break them down into their parts," the student teachers had a mean score of 2.59 which was their only "When I learn" mean score higher than the Professional Service students which had a mean score of 2.31. The mean score of the total group for the Abstract Conceptualization (AC) column was 2.50.

A mean of 3.00, which was the highest mean value determined for Abstract Conceptualization (AC), was scored by the Professional Service students for the third "When I learn" statement which was relative to "When I learn I like ideas and theories." The student teachers had a mean score of 2.70 for this statement, while the total group responded with mean score 2.80. The Professional Service students had a 2.80 mean score for the fourth and last "When I learn" statement "When I learn I evaluate things" which allowed the combined group preference for Abstract Conceptualization (AC) to have a determined mean score of 2.48; overshadowing the 2.44 mean score of the student teachers.

The four "I learn best" statement/responses were "I learn best when I rely on logical thinking" followed by "I learn best from rational theories," "I learn best when I rely on my ideas" and "I learn best when I analyze ideas." The total group mean score was 2.50 for the first "I learn Best" item "I learn best when I rely on logical thinking" compared to the student teacher mean score of 2.48. Furthermore, the Professional Service students had a mean score of 2.54 for the same statement/response. The second portion of the "I learn best" series "I learn best from rational theories" revealed a mean score of 2.30 for the student teachers which was their only response for this group of statements/responses with a higher mean score than the Professional Service students which had a mean score of 1.77. Accordingly the total group had a calculated mean score of 2.13. the Professional Service students reflected their learning style preference with a mean score of 2.77 on "I learn best when I rely on my ideas" and "I learn best when I analyze ideas." Student teachers had mean score of 2.59, while the combined mean score for the total group was 2.65 for the "I learn best when I rely on my ideas" statement. The

mean score 2.73 represented the total groups reflection for this Abstract Conceptualization (AC) as did the mean score of 2.70 for student teachers concerning the last "I learn best" statement.

Student teacher preferences revealed a mean score of 2.85 for the "When I am learning" statement. "When I am learning I tend to reason things out" had a mean score of 2.85 for student teachers as compared to a 2.62 mean score for Professional Service students and a mean score of 2.78 for the combined groups. The student teachers indicated "When I am learning I am a logical person" a mean score of 2.78, while the Professional Service students had a mean score of and a total group mean score of 2.68. The Professional Service students had the high mean score of 2.92 for the "When I am learning" stem for the item "When I am learning I am a rational person." In addition, the total group had a mean score of 2.65 as compared to a mean score of 2.52 for the student teachers.

The Professional Service students responses to the statement/response "I learn by thinking" Abstract Conceptualization (AC) stage of Kolb's (1984, 1985) Learning-Style Inventory (LSI) reflected a mean score of 2.54, while the mean score for student teachers was 2.41 compared to 2.48 for the total group.

TABLE IX

A COMPARISON OF RESPONDENT PREFERENCES RELATED TO THE ABSTRACT CONCEPTUALIZATION (AC) STAGE OF THE LEARNING CYCLE

Statements	Mean Response by Group: Student Teachers (N=27)	Professional Service Interns (N=13)	Total (N=40)
When I learn, I like to think about ideas.	2.37	2.54	2.43
I learn best when I rely on logical thinking.	2.48	2.54	2.50
When I am learning, I tend to reason things out.	2.85	2.62	2.78
I learn by thinking.	2.41	2.54	2.48
When I learn, I like to analyze things, break them into their parts.	2.59	2.31	2.50
When I am learning, I am a logical person.	2.78	2.46	2.68
I learn best from rational theories.	2.30	1.77	2.13
When I learn, I like ideas and theories.	2.70	3.00	2.80
I learn best when I rely on my ideas.	2.59	2 77	2.65
When I am learning, I am a rational person.	2.52	2.92	2.65
When I learn, I evaluate things.	2.44	2.54	2.48
I learn best when I analyze ideas.	2.70	2.77	2.73
Total	30.73	30.78	30.81

The data in Table X revealed respondent learning style preferences as related to Kolb's (1984, 1985) Learning-Style Inventory (LSI) Active Experimentation (AE) stage of the learning cycle. Active Experimentation (AE) was the preferential learning style of student teachers as their responses reflected high mean scores for 10 of the 12 statement/responses. The student teacher sum of mean scores for the 12 Active Experimentation (AE) statements was 32.74 as compared to the total group mean score of 31.73 and a mean score of 29.52 for Professional Service students.

The first Active Experimentation (AE) item "When I learn I like to be doing things" amassed a student teacher mean score of 3.15, while the Professional Service interns had a mean score of 2.38 for this statement/response and an overall mean score for the total group of 2.90. The following item "I learn best when I work hard to get things done" reflected a mean score 2.78 for student teachers. Professional Service students and the total group had mean scores of 2.23 and 2.60 respectively. "When I am Learning I am responsible about things" was the first of two items located in the fourth stage of Kolb's (1984, 1985) Learning-Style Inventory (LSI) among Professional Service students which demonstrated a stronger preference for in the Active Experimentation (AE) stage than the student teachers. The mean score for Professional Service interns was 2.38 as compared to a mean score of 2.33 for the student teachers and a mean score of 2.35 for the total group.

The "I learn by doing" statement/response reflected a mean score of 3.04 indicating a strong preference for Active Experimentation (AE) among student teachers. The Professional Service students compiled a mean score of 2.38, while the mean score for the total group was 2.83 for Active Experimentation (AE). The "When I learn I like to

try things out" Active Experimentation (AE) item reflected a total mean score of 2.67 for the student teachers, while the Professional Service students had a mean of 2.54 with an overall mean score of 2.63 for the total group.

The total group response to "When I am learning I am an active person" was relative to the Active Experimentation (AE) stag, however the mean score of 2.50 was rather low. The Professional Service students evaluation of this section of Kolb's (1984, 1985) Learning-Style Inventory reflected a mean score of 2.38, while the student teachers collectively had a mean score of 2.56. The item, "I learn best from a chance to try out and practice" was the next sequential statement and had a mean score of 2.85 among student teachers, while the total group response to this statement/response resulted in a mean score of 2.98. The Professional Service students response indicated this statement was their second leading preference Active Experimentation (AE) which resulted in a mean score of 3.23.

A mean score of 2.85 was reflected among student teachers, while Professional Service students had a mean score of 2.15 and an overall value of 2.63 was for the total group in favor of the Active Experimentation (AE) statement "When I learn I like to see results from my work." The next Active Experimentation (AE) statement "I learn best when I can try things out for myself" reflected the student teachers learning style preference with a mean score of 2.70, while the Professional Service students had a mean score of 2.68. The mean score for the combined group was 2.68. A mean score of 2.53 expressed the learning preference for the total group to "When I am learning I am a responsible person." The student teachers responses were indicative of the mean score of 2.63 for this item, while the Professional Service students had a mean score of 2.31. The

"When I learn I like to be active" statement/response reflected a mean score of 2.70 among student teachers, while the combined group had a mean score of 2.65 and the

TABLE X

A COMPARISON OF RESPONDENT PREFERENCES RELATED TO THE ACTIVE EXPERIMENTATION (AE) STAGE OF THE LEARNING CYCLE

	Mean Response by Group		
Statements	Student Teachers (N=27)	Professional Service Interns (N=13)	Total (N=40)
When I learn, I like to be doing things.	3.15	2.38	2.90
I learn best when I work hard to get things done.	2.78	2.23	2.60
When I am learning, I am responsible about things.	2.33	2.38	2.35
I learn by doing.	3.04	2.38	2.83
When I learn, I like to try things out.	2.67	2.54	2.63
When I am learning, I am an active person.	2.56	2.38	2.50
I learn best from a chance to try out and practice.	2.85	3.23	2.98
When I learn, I like to see results from my work.	2.85	2.15	2.63
I learn bet when I can try things out for myself.	2.70	2.62	2.68
When I am learning, I am a responsible person.	2.63	2.31	2.53
When I learn, I like to be active.	2.70	2.54	2.65
I learn best when I am practical.	2.48	2.38	2.45
Total	32.74	29.52	31.73

Professional Service students' response indicated a mean score for Active Experimentation (AE) of 2.54.

The last statement for the Active Experimentation (AE) stage of Kolb's (1984, 1985) Learning –Style Inventory was "I learn best when I am practical" which had a student teacher response mean score of 2.48 while Professional Service students responses reflected a mean score of 2.38. However, the total group response indicated an overall mean score between the student teachers and Professional Service students of 2.45.

The student teachers' total mean score reflected for Active Experimentation (AE), was 32.74 which was the learning stage most preferred among the four learning stages in Kolb's (1984, 1985) Learning-Style Inventory (LSI). The Abstract Conceptualization (AC) stage followed Active Experimentation (AE) closely with a total mean score of 30.73. A total mean score of 28.53 revealed Reflective Observation (RO) was the third among learning preferences in the sequence. This left Concrete Experience (CE) the least preferred learning preference of the four possible stages with a total mean score of 27.66.

The Professional Service students preferred learning stage for Concrete Experience (CE) reflected a totaled mean score of 31.39. A total mean score of 30.78 disclosed Abstract Conceptualization (AC) was the second learning style preference among Professional Service students. This was closely followed by Active Experimentation (AE), with a total mean score of 29.52 for Professional Service students. The mean score, 28.31 for Reflective Observation (RO) that determined the least desired response among the Professional Service students was their least preferred learning option.

The mean scores for the overall group consisting of both student teachers and Professional Service students reflected their preferred cycle of learning was Active Experimentation (AE) with a total mean score of 31.73 followed by Abstract Conceptualization (AC) stage with a total mean score of 30.81. As an overall group Concrete Experience (CE) with a total mean score of 28.89 was their third preference. The least preferred learning stage among the overall group measured by Kolb's (1984, 1985) Learning-Style Inventory (LSI), however was Reflective Observation (RO) , with an overall score of 28.72.

TABLE XI

A SUMMARY OF RESPONDENT PREFERENCES RELATED TO THE FOUR STAGES OF THE LEARNING CYCLE

	Mean Response by Group		
Statements	Student Teachers (N=27)	Professional Service Interns (N=13)	Total (N=40)
Concrete Experience	27.66	31.39	28.89
Reflective Observation	28.85	28.31	28.72
Abstract Conceptualization	30.73	30.78	30.81
Active Experimentation	32.74	29.52	31.73

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this chapter was to present a summary of the study which was conducted primarily to determine learning style preferences and selected demographic characteristics among senior students in Agricultural Education who completed the student teaching experience and Professional Service students enrolled in the pre-internship class "Non Formal Methods of Teaching Agriculture" (AGED 4203). Findings, conclusions, and recommendations in this chapter were based upon the analysis of these data.

Purpose of the Study

The purpose of this study was to determine the preferred learning styles of senior students enrolled in Agricultural Education at Oklahoma State University who were completing the student teaching experience and those entering Professional Service internships at the close of the 1996 spring semester.

Objectives of the Study

To accomplish the purpose of this study it was necessary to:

(1) Determine selected demographic characteristics of senior students completing student teaching and those entering Professional Service internships.

(2) Determine the students individual learning styles.

(3) Compare differences in learning styles among students completing student teaching and those entering Professional Service internships.

Study Population

The population relating to this study consisted of 40 senior students enrolled in Agricultural Education at Oklahoma State University during the 1996 spring semester. Twenty-seven were in the process of completing their student teaching experience, while 13 were enrolled in the pre-internship course—Non-Formal Methods of Teaching Agriculture (AGED 4203).

Design of the Instrument

Instrumentation used in this study was in two general areas, demographics and learning style. The demographic portion was a questionnaire developed by the author to obtain data addressing gender, age, ethnicity, educational background, membership in high school agricultural organizations and agriculture experience/background. Kolb's (1984, 1985) Learning Style Inventory (LSI) was used because it was "user friendly", relatively accurate, and an efficient method to determine learning styles among groups of students.

Presentation of Data

The following section of this chapter summarized the findings of Chapter IV and based the conclusions drawn and recommendations upon those findings. The responses of the population were based upon a demographic survey instrument developed by the author and Kolb's (1984, 1985) Learning-Style Inventory (LSI).

Analysis of Data

Descriptive statistics were used in describing the results and findings of this study. Arithmetic means, weighted means, frequency distributions, percentages, ranges and overall rankings were used to report results of this study.

Major Findings of the Study

Distribution of Study Respondents by Gender

A total of 40 Agricultural Education students participated in this study. Student Teachers made up over two-thirds of the study population which consisted of over 88 percent male and 11 percent female students. On the other hand, Professional Service students were almost 77 percent male, while slightly over 23 percent were female. The total study group was 85 percent male and 15 percent female.

Distribution of Study Respondents by Age

The range in age for the student teachers was 21 to 37 with a mean of 22.85 years. The Professional Service students ranged in age from 20 to 28 and had a mean age of 22.31 years. The mean age for the total group was 22.68 years.

Distribution of Study Respondents by Ethnicity

Slightly over seven percent of the study population was Native American, while almost 93 percent were Caucasian in the student teacher group. Native Americans made up 15 percent of the Professional Service student portion of the study group, while almost 85 percent were Caucasian. Ten percent of the total study population was identified as Native American and 90 percent Caucasian.

Distribution of Student Respondents by Educational Background

Among student teachers, over 33 percent received all their higher education at Oklahoma State University, while more than 48 percent transferred to OSU from a two-year college and slightly over 18 percent transferred from a four-year regional college/university. The educational background of the Professional Service students, on the other hand, revealed over 48 percent transferred from a two-year college, while less than 16 percent received all their higher education at Oklahoma State University. Overall, more than 27 percent received all their higher education from OSU, while 60 percent

from a two-year college and more than 2 percent transferred to OSU from a four-year college/university.

Distribution of Student Respondents by Membership In High School Student Organizations

Slightly over 74 percent of the student teacher group had an FFA only experience, while almost 26 percent were involved with both 4-H and FFA. Two-thirds of the Professional Service students were involved in a FFA only experience, while 25 percent had both 4-H and FFA experience and slightly over eight percent had a 4-H only experience. The total group revealed over 71 percent of the participants had an FFA only experience, while nearly 26 percent participated in both 4-H and FFA, and less than three percent had a 4-H only experience.

Distribution of Student Respondents by Agricultural Experience/Background

Two-thirds of the student teachers had background experience in both agribusiness and production agriculture, while over 22 percent reported livestock only experience and 11 percent reported experience with both crops and livestock. Forth-six percent of the Professional Service students had background involvement with both agribusiness and production agriculture, while over 15 percent revealed livestock only participation and over 38 percent revealed background/experience with both crops and livestock. As a total group, 60 percent had background/experience in both agribusiness and production

agriculture, while 20 percent reported experience with livestock only as well as both crops and livestock experience respectively.

Learning-Style Inventory (LSI) Stage

Kolb's (1984, 1985) Learning-Style Inventory consisted of twelve items. Each of the 12 items initiated the statement with a "stem" which included "When I learn," "I learn best when," "When I am learning" and "I learn by." Each statement ending was structured to reflect a different learning stage. The learning stages were Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC) and Active Experimentation (AE). The statement endings were ranked in order of preference with the primary choice receiving a rating of "four" and the least preferred ending receiving a rating of "one." The second most desirable statement completion received a "three" and the ending selected as the third response received a "two" rating. After the twelve phrases and endings were rated the four columns were totaled. The first column was Concrete Experience (CE), the second column was Reflective Observation (RO), followed by Abstract Conceptualization (AC) and Active Experimentation (AE).

Interpretation of the Cycle of Learning

The use of percentage values when interpreting the Cycle of Learning and the Learning Style Grid used numbers interpreted from study group responses in a way to compare them with the scores of other individuals, groups, etc. The Cycle of Learning contained the raw scores for the four stages, Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC) and Active Experimentation (AE).

These raw scores were compiled from data collected from over 1,400 adults. The concentric circles on the Cycle of Learning represent percentile scores for the normative group of respondents. This was a portion of Kolb's (1984, 1985) Learning-Style Inventory (LSI) evaluation and development. These percentages will be referred to in various sections of Chapter five.

Comparison of Respondent Preferences Related
To Concrete Experience (CE) Stage of the
Learning-Style Inventory Stage

In column one, the Professional Service students had a total mean score of 31.39 for Concrete Experience (CE) compared to a total mean score of 27.66 for the student teachers, while the mean score for the total group was 28.89. When the total mean scores were plotted on the Cycle of Learning, the mean score of 31.39 for the Professional Service students involved over 80 percent of the scale. The student teachers had a total mean score of 27.66 which encompassed slightly over the 60 percent area on the Cycle of Learning, while the group as a whole had a mean score of 28.89 which involved 70 percent of the total area on the upper half of the Cycle of Learning.

Comparison of Respondent Preferences Related
To the Reflective Observation (RO) Stage of
The Learning-Style Inventory Stage

This summation included Reflective Observation (RO) stage mean scores for student teachers, Professional Service students and the group as a whole. The Reflective

Observation (RO) column revealed a mean score of 28.85 for student teachers, while 28.31 was the total of 13 mean scores for Professional Service students and 28.62 was the mean score for the total group. The Reflective Observation (RO) values were plotted on the Cycle of Learning. The three points plotted on the horizontal axis were the student teachers' mean score of 28.85, Professional Service students' mean score of 28.31 and the total group mean score of 28.72 which was within the 45 to 50 percent range.

Comparison of Respondent Preferences Related
To the Abstract Conceptualization (AC) Stage
Of the Learning-Style Inventory Stage

Abstract Conceptualization (AC) was the third of four learning stages used in Kolb's (1984, 1985) Learning-Style Inventory (LSI). Professional Service students had the highest tabulated mean score of 30.78 for Abstract Conceptualization (AC). This was followed by a mean score of 30.73 for the student teachers, while the mean score for the total group was 30.81.Observation of the findings revealed only a slight difference (0.04) in the mean scores of two the groups which means all three points plotted on the lower vertical axis were close to 55 percent of the Learning Cycle area.

Comparison of Respondent Preferences Related
To the Active Experimentation (AE) Stage of
The Learning-Style Inventory Stage

Active Experimentation (AE), was the last of the four learning stages. The student teacher's total mean score was 32.74 followed in sequence by the total group with a mean

score of 31.73, while the Professional Service students had a total mean score of 29.52. The point plotted on the Cycle of Learning graph for student teachers was located just inside the 40 percent line on the horizontal axis, while a mean score of 31.52 when plotted on the graph included slightly more than 31 percent of the area and the Professional Service students total mean score of 29.52 encompassed almost 30 percent of the area when plotted on the Cycle of Learning graph.

After the means for the four stages, Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC), and Active Experimentation (AE), were totaled, the means for student teachers, Professional Service students and the overall group were plotted on the Cycle of Learning graph.

The Cycle of Learning-Student Teachers

The student teachers' mean scores were 27.66 for Concrete Experience (CE), 28.85-Reflective Observation (RO), 30.73-Abstract Conceptualization (AC), and 32.74 for Active Experimentation (AE). These values were plotted on "The Cycle of Learning" shown in Figure 1. The Concrete Experience (CE) mean score of 27.66 was plotted on the upper vertical axis where it included just over 60 percent of the Learning Cycle area. The Reflective Observation (RO) mean score, 28.85, was located on the right horizontal axis near the 45 percentile level. The Abstract Conceptualization (AC) mean score of 30.73 was on the lower vertical axis where it was plotted near the 56 percentile level. A mean score of 32.74 for Active Experimentation (AE) point was located at the 40 percent level on the left horizontal axis.

By connecting these four points a polygon was formed depicting the shape off a kite. The shape indicated which of the four basic modes student teachers preferred most as well as the least preferred. Referring to Figure 1, and the drawn polygon, the student teachers preference of learning modes were Concrete Experience (CE) about 62 percent, Abstract Conceptualization (AC) 56 percent, Reflective Observation (RO) 45 percent and Active Experimentation (AE) about 35 percent, as indicated by the shape of the polygon.

A summary of the student teachers' preferences indicated a strong choice for Concrete Experience (CE) which was indicated by 62 percent of the area being encompassed on the vertical axis of the graph, while their second highest preference was Abstract Conceptualization (AC) with 56 percent being the point where the lower vertical axis extended, followed by Reflective Observation (RO) at 45 percent on the right horizontal axis and their least preferred stage of learning was Active Experimentation (AE) encompassing about 35 percent, of the area on the right horizontal axis.

The Cycle of Learning

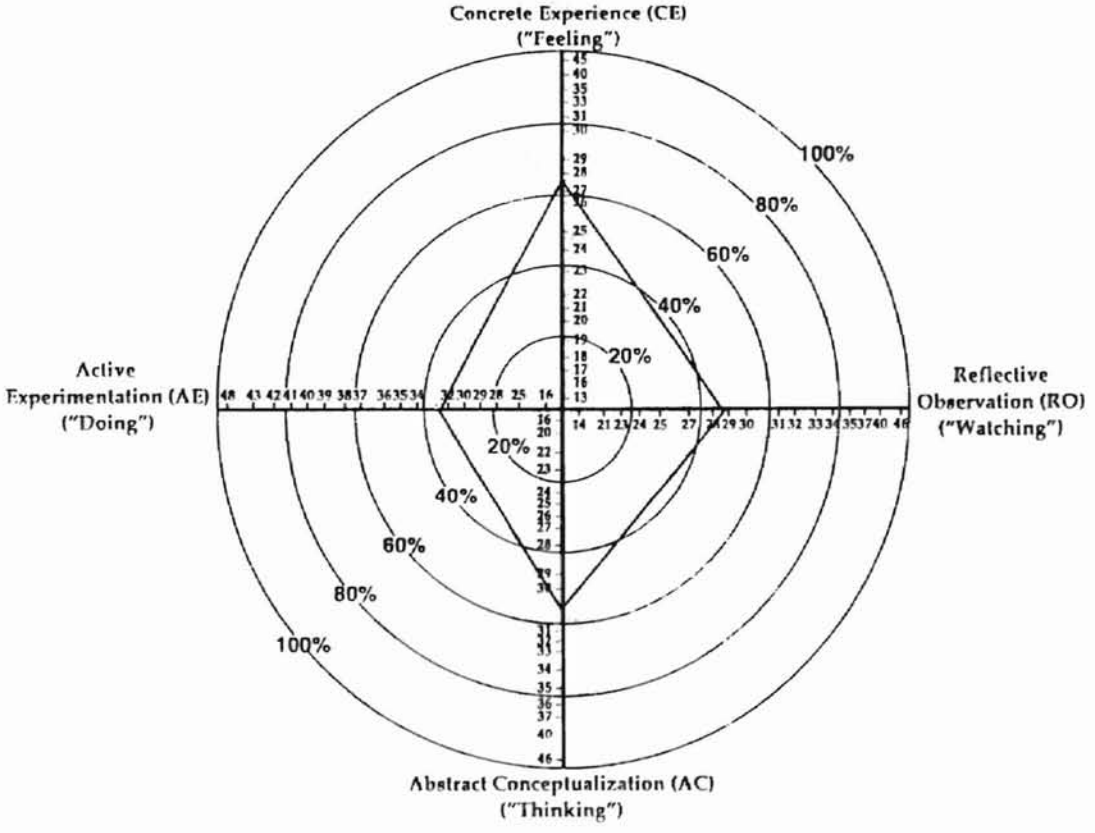


Figure 1. Cycle of Learning - Student Teachers

The Cycle of Learning for the Professional Service Students

The Professional Service mean scores for the four stages of the learning cycle were 31.39 for Concrete Experience (CE), 28.31-Reflective Observation (RO), 30.78- Abstract Conceptualization and 29.52 for Active experimentation (AE). The mean score values were plotted on the Cycle of Learning at their respective locations. The Concrete Experience (CE) response value of 28.31 was marked just outside the 80 percent line on the upper vertical axis. A point was also marked at 28.31 along the right horizontal axis for the Reflective Observation (RO) mean score; this point was near the 43 percentile level. The Professional Service students had a mean score of 30.78 for Abstract Conceptualization (AC) located on the lower vertical axis which encompassed just under the 60 percent of Learning Cycle graph at that particular point. The final point plotted was Active Experimentation (AE) with a mean score of 29.52 plotted along the left vertical axis close to the 34 percentile level on the Cycle of Learning.

The Professional Service students learning preference involved learning from feeling with Concrete Experience (CE) being a strong choice which encompassed slightly over 80 percent of the Cycle of Learning on the vertical axis followed by Abstract Conceptualization (AC) stage with a fairly strong preference toward learning by thinking which was evident by about 56 percent of the Cycle of Learning included. The mean score of 28.31 for Reflective Observation (RO) was plotted at about the 45th percentile. The Professional Service students least preferred learning stage was Active Experimentation (AE) indicated by a mean score of 29.52 which was located on the Cycle of Learning near the 38th percentile.

The Cycle of Learning

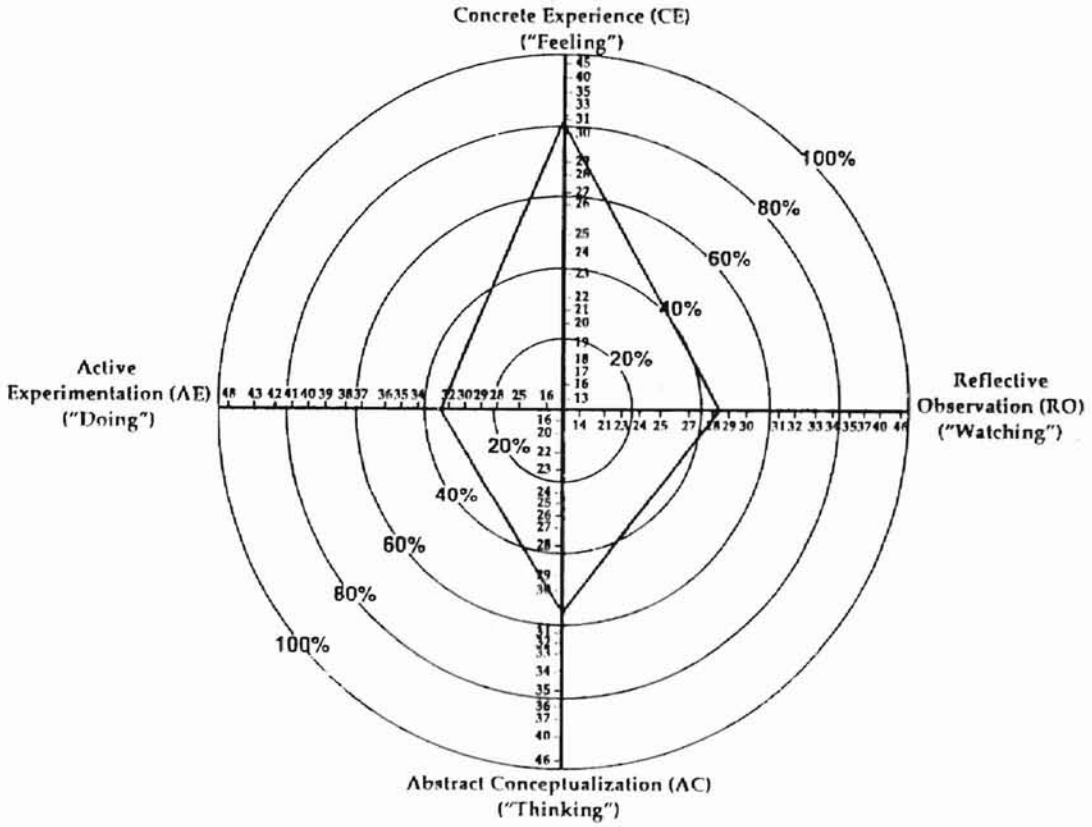


Figure 2. Cycle of Learning - Professional Service Students

The Cycle of Learning-Total Group

The total groups' highest preferred response was expressed in a mean score of 31.73 for the Active Experimentation (AE) stage of learning. Abstract Conceptualization (AC) followed with a mean of 30.81, while the Concrete Experience (CE) mean value was 28.89. The least preferred method of learning by the total group was found to be Reflective Observation (RO) which was reflected in their mean score of 28.62.

The Active Experimentation (AE) mean score, 31.73, was located on the left horizontal axis at about the 30th percentile, while the mean score for Abstract Conceptualization (AC), 30.81, was plotted on the lower vertical scale encompassing about 57 percent of the Cycle of Learning. The Concrete Experience (CE) location was pin pointed on the upper vertical axis with a score of 28.89 which included an area of about 68 percent of the Cycle of Learning. As a group, the study population's least preferred method of learning was Reflective Observation (RO) which involved learning by listening and watching. The mean score of 28.62 for Reflective Observation (RO) involved about 45 percent of the area on the right horizontal axis illustrated by the polygon in Figure 4.

The polygon for the total group was very similar in shape to the student teachers. The Concrete Experience (CE) mean score of 27.66 for the student teachers was slightly less than the mean score of 28.89 for the total group. A difference of 0.13 between means was determined for Reflective Observation (RO) between the total group mean score 28.72 and the student teacher mean score of 28.85. The Abstract Conceptualization (AC), mean score 30.73 for student teachers compared to the mean score of 30.81 for the total

group, had a closest margin 0.08. The fourth learning stage, Active Experimentation (AE), had a difference of 1.01 between the mean scores for student teachers, 32.74, and the total group mean score of 31.73. The Cycle of Learning for the total group reflected about 65 percent of the area encompassed by the group's preference for learning by feeling as indicated by Concrete Experience (CE), while approximately 57 percent of the area involved learning by thinking as revealed in the group's second leading learning preference. Learning by watching and listening as disclosed by the group's third choice regarding learning style included almost 45 percent of the area which was representative of Reflective Observation (RO). Active Experimentation (AE) was the least preferred learning style for the total group which was "graphically" illustrated with less than 40 percent of the Cycle of Learning involved.

The Cycle of Learning

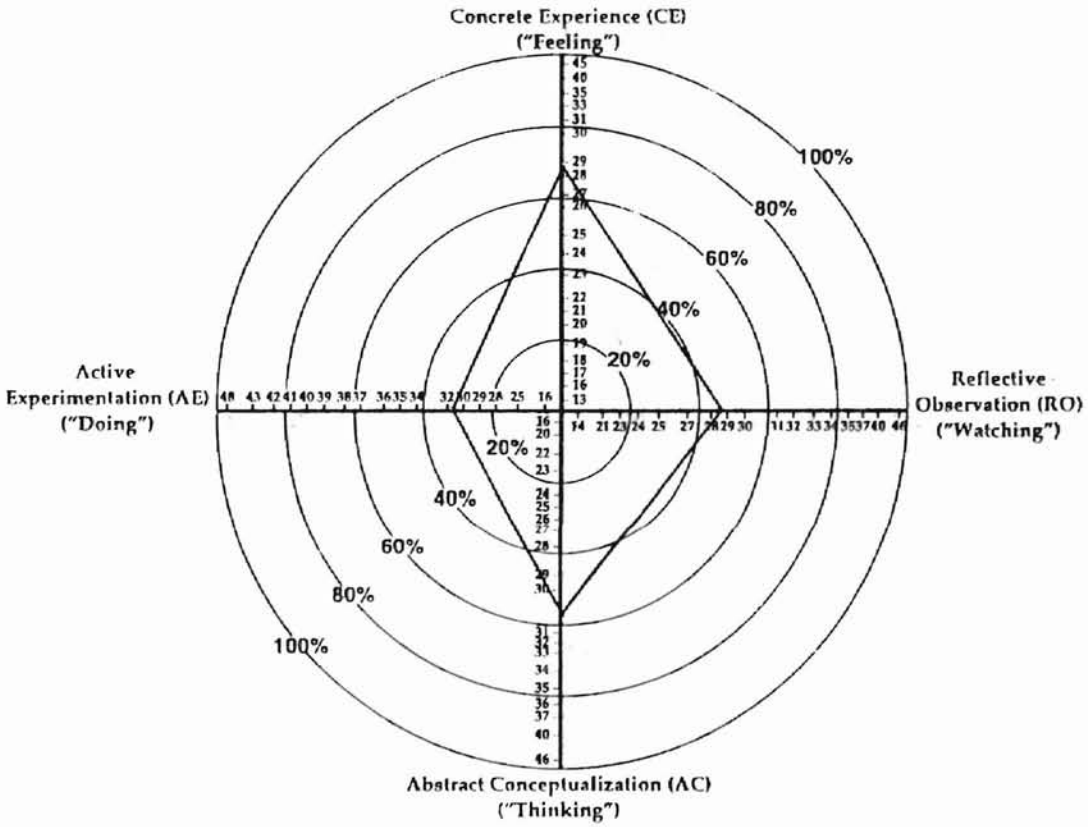


Figure 3. Cycle of Learning - Total Group

Learning-Style Grid-Student Teachers

The next step in the process of determining learning style was to determine the two combination scores used to plot data points on the Learning-Style Grid. The two numbers used to calculate the combination score for Concrete Experience (CE) and Active Experimentation (AE) were determined by subtracting the Concrete Experience (CE) from Active Experimentation (AE), while the Reflective Observation mean score was subtracted from the Active Experimentation (AE) mean score. These summations were plotted on the respective vertical and horizontal axis of the Learning-Style Grid .

The student teacher's Abstract Conceptualization (AC) score minus their Concrete Experience (CE) score was calculated to be 3.07 (AC-CE). The value 3.05 was plotted on the vertical axis of the Learning-Style Type Grid. The value 3.07 depicting the for the AC-CE combination score which was near the 46th percentile. However, the Active Experimentation (AE), Reflective Observation (RO) combination score (AE-RO) of 3.89 was plotted on the horizontal axis at about the 44th percentile. These values plotted on the Learning-Style Grid for the student teachers indicated tendencies toward being divergent in their learning style or being able to view concrete situations from several different perspectives.

Learning-Style Type Grid

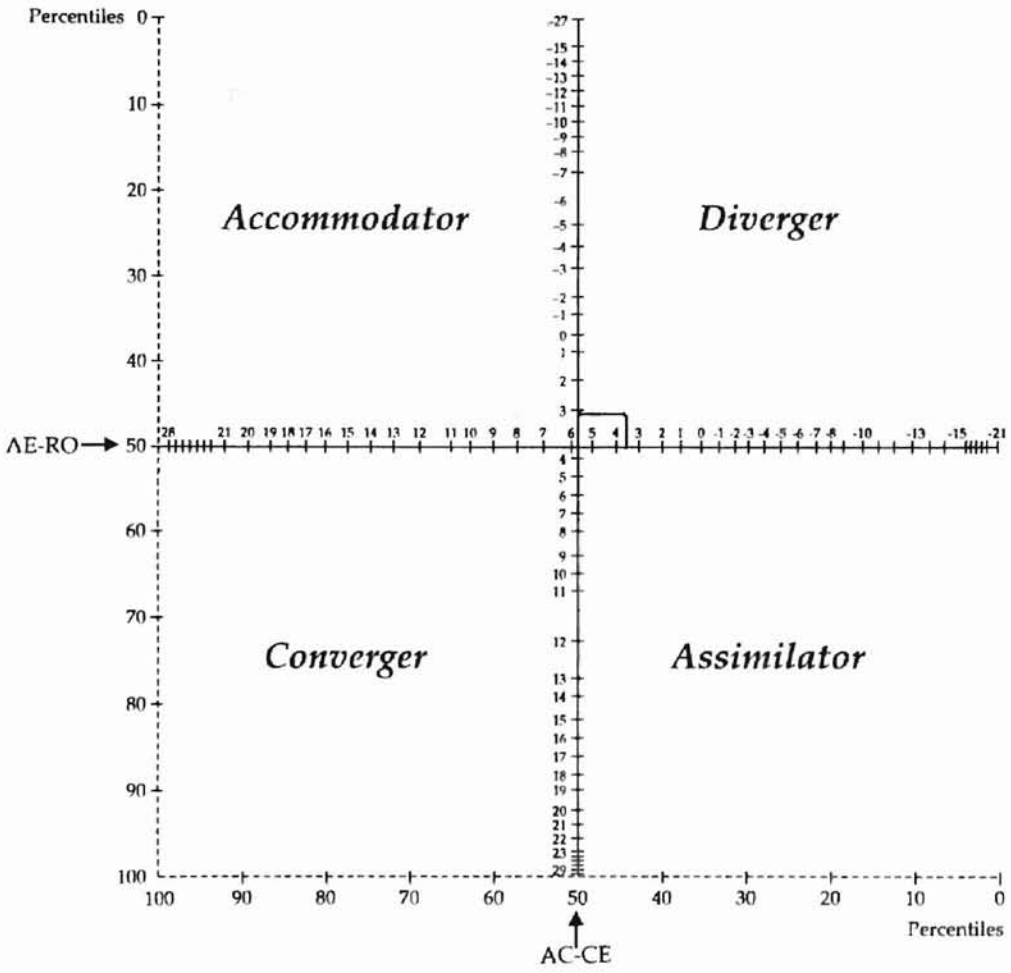


Figure 4. Learning-Style Type Grid - Student Teachers

Learning-Style Grid-Professional Service Students

The combination score for Professional Service students was determined by subtracting the mean score of 30.78 for Abstract Conceptualization (AC), from the mean score of 31.39 for Concrete Experience (CE) which equaled AC-CE combination score of –0.61 plotted on the vertical axis of the Learning-Style Type Grid. The point plotted revealed a percentile rating of 35. To determine the Active Experimentation (AE) - Reflective Observation (RO) combination score, the coordinate mean of 29.52 for Active Experimentation (AE) was subtracted from the Reflective Observation (RO) mean 28.31 to equal 1.21. The combination score of 1.21 for AE-RO was plotted on the horizontal axis, which revealed a rating on the Learning-Style Grid at the 40th percentile. The two combination scores at the 35th percentile on the vertical axis and the 40th percentile on the horizontal axis revealed strengths combining Concrete Experience (CE) and Reflective Observation (RO) as an indicator of a diverger learning style among the Professional Service students.

Learning-Style Type Grid

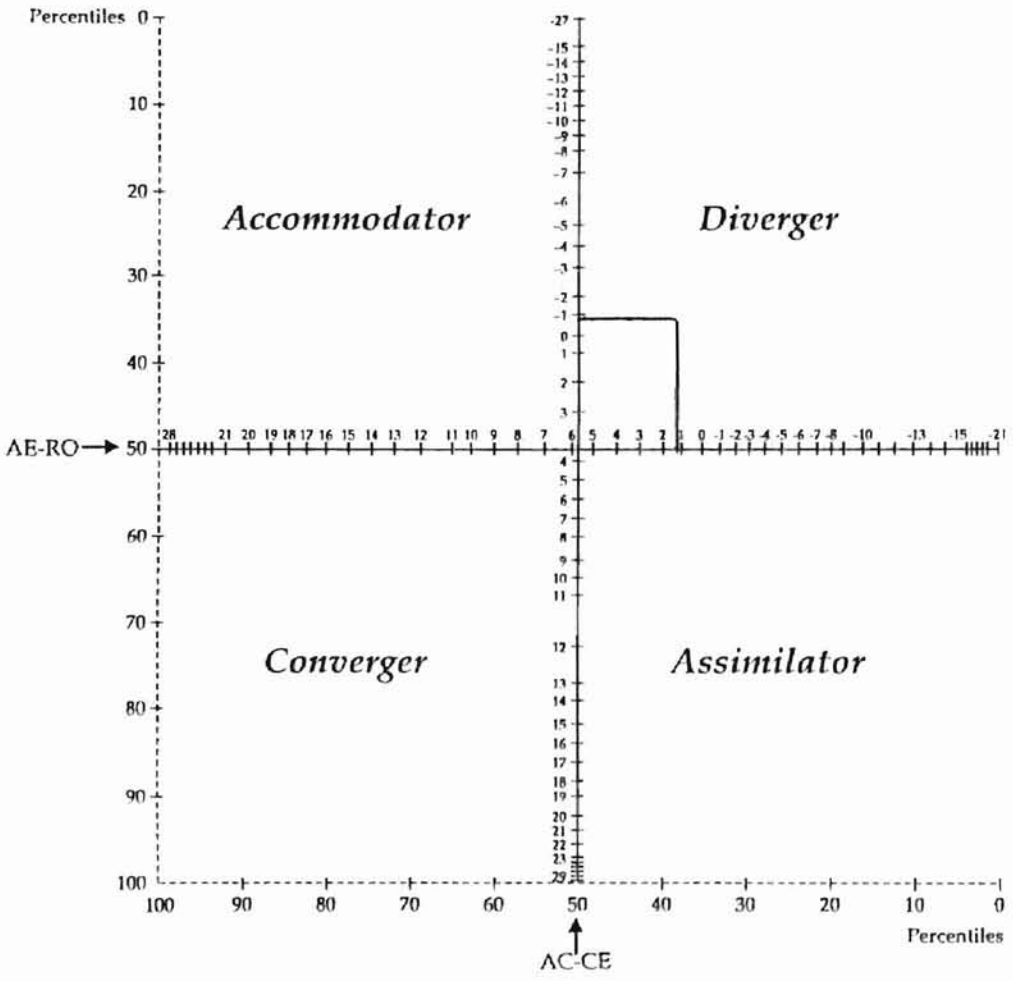


Figure 5. Learning-Style Type Grid - Professional Service Students

Learning-Style Grid-Total Group

Determination of combination scores on the Learning-Style Type Grid for the total group included subtracting the mean score of 28.89 for Concrete Experience (CE), from 30.81 for Abstract conceptualization (AC) to equal 1.92 plotted on the vertical axis which indicated a more abstract approach to learning. Subtracting the Reflective Observation (RO) value of 28.62 from the Active Experimentation mean of 31.73 resulted in a combination score of 3.01. Therefore, when plotted on the horizontal axis revealed a more active approach to learning. Plotting the AC-CE combination score of 1.92 and the AE-RO combination score 3.01 revealed ratings on the Learning-Style Grid at the 40th percentile and the 44th percentile respectively.

The composite group of respondents including both student teachers and Professional Service students seemed to prefer the Diverger learning style.

Conclusions

The interpretation and inspection of the major findings prompted the following conclusions.

1. Based on the major findings in this study, the student respondents were primarily male and 22.68 years of age. Furthermore, student respondents in this study were clearly Caucasian and typically transferred from a two-year junior college to Oklahoma State University to complete their education at the baccalaureate level.

Learning-Style Type Grid

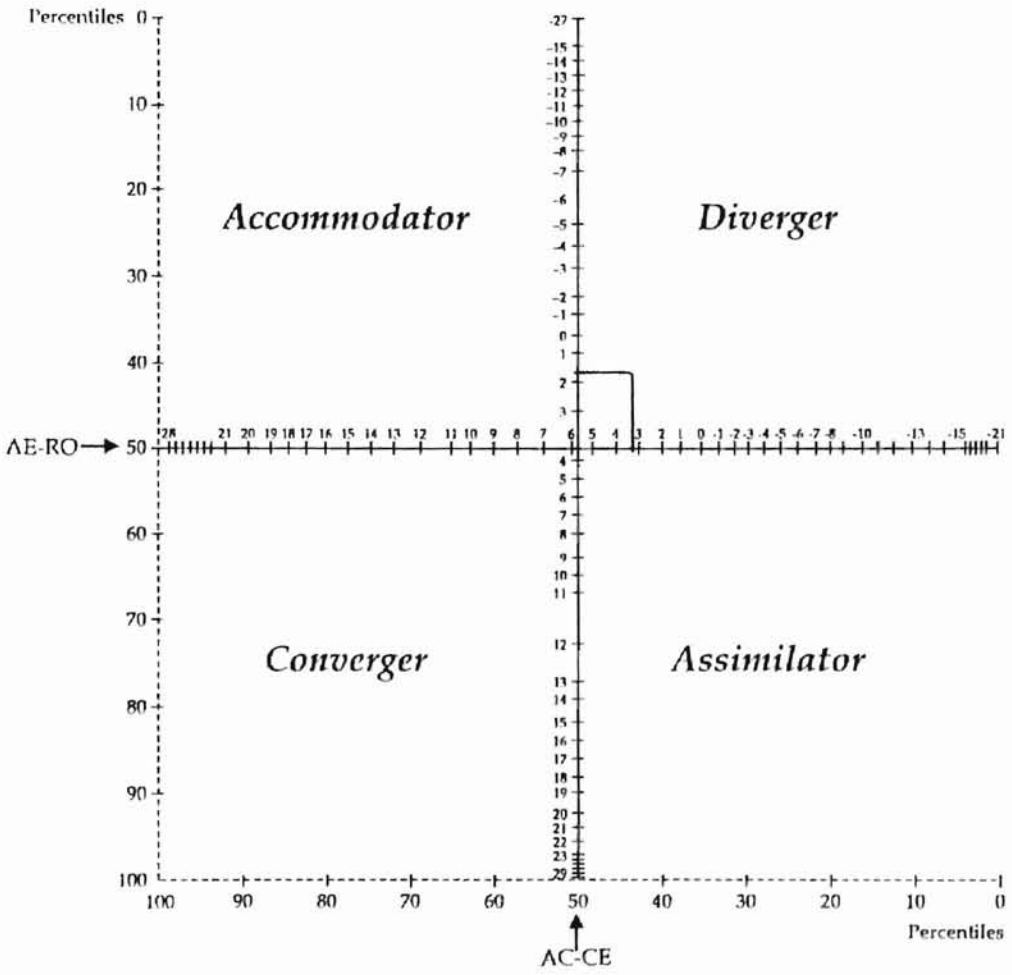


Figure 6. Learning-Style Type Grid - Total Group

2. It was apparent from the major findings that students participating in this study were primarily FFA members during their high school experiences. In addition, further examination of the study respondents largely revealed background experience in both agribusiness and production agriculture. Student teachers on the other hand were slightly stronger in the agribusiness-production agriculture experience area, while Professional Service students seemed somewhat more experienced in the combination of crops and livestock.

3. Based on major findings of the study, it was apparent the Professional Service students had somewhat stronger preferences for learning from feeling, relating to people and specific experiences compared to the student teachers. Furthermore, it was obvious both student teachers and Professional Service students in this study were similar in their learning style orientation toward learning by watching and listening and learning by thinking. However, it was apparent from the findings the student teachers were somewhat more involved in learning by doing than the Professional Service students.

4. It was apparent from the Cycle of Learning both student teachers and Professional Service students seemed to have rather strong preferences for being people oriented which was evident in their sensitivity to feelings and people. Student teachers, on the other hand, seemed slightly more oriented to learning preferences dealing with Reflective Observation (RO) or

observing carefully before making judgements and viewing issues from different perspectives.

5. In observing the data reflected in the Learning-Style Type Grid, it was apparent the student teachers in this study were very balanced in their approach to learning but clearly strong in their preference for the combination of Concrete Experience (CE) with Reflective Observation (RO) as a learning style. Compared to the student teachers, it was apparent the Professional Service students in this study were even stronger in their learning preference toward Concrete Experience (CE) with Reflective Observation (RO) providing some balance.

6. As a total group, it was apparent this particular group of Agricultural Education students were Divergers in their learning preference. Based on Kolb's (1984, 1985) Learning-Style Inventory (LSI), it was apparent individuals with learning style preferences reflective of the Diverger approach to learning were typically successful as personnel managers, planners and consultants.

Recommendations

The following recommendations were judgements based on the major findings and conclusions resulting from this study.

1. Based on the study findings, it was recommended the Department of Agricultural Education, Communications and 4-H Youth Develpment at Oklahoma State University conduct in-service activities for faculty to address the issue of student learning styles.
2. It was further recommended the Effective Teaching Committee in the College of Agricultural Sciences and Natural Resources (CASNR) sponsor and conduct workshops for faculty wishing to change and/or modify teaching methods in order to present a more balanced instructional approach to accommodating a student population with diverse learning preferences.
3. To assist departmental as well as college faculty in making appropriate instructional changes, it was recommended to conduct Learning-Style Inventories (LSI) of all incoming freshmen during the Agricultural Orientation class (AG 1011). In addition, results of each student's Learning-Style Inventory (LSI) should be shared with them by their academic advisor and a copy placed in their academic file.
4. Selected departmental and/or CASNR teaching faculty should be identified to modify and/or change traditional instructional approaches to demonstrate balance with regard to a variety of teaching methods to enhance student performance.

Recommendations for Further Study

1. It was recommended additional learning style studies be conducted with student teachers, since they have an opportunity of being able to influence future agriculture students at the university level.
2. It was further recommended additional research be conducted among agricultural students comparing differences in learning style preference by major, gender, age, ethnicity and type of agricultural background.

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APPENDIXES

APPENDIX A

INSTITUTIONAL REVIEW BOARD

APPROVAL FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 05-01-96 IRB#: AG-96-025

Proposal Title: LEARNING STYLE DETERMINATION OF STUDENT TEACHERS AND PROFESSIONAL SERVICE OPTION INTERNS ENROLLED IN AGRICULTURAL EDUCATION AT OKLAHOMA STATE UNIVERSITY

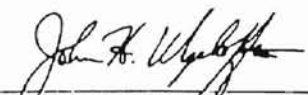
Principal Investigator(s): James D. White, Andrew M. Kincaid, Jr

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

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

Signature:  Date: May 1, 1996

Chair of Institutional Review Board

APPENDIX B

DEMOGRAPHIC SURVEY INSTRUMENT

Part I. Demographic Characteristics

1. Gender:
- ☐ Female
- ☐ Male

2. Age: _____

3. Ethnicity:
- ☐ Caucasian
- ☐ Native American
- ☐ Black
- ☐ Hispanic
- ☐ Asian

4. Educational Background:
- ☐ Transferred to OSU from a two-year college
- ☐ All higher education at OSU
- ☐ Transferred to OSU from a four-year college

5. High school agricultural student organization membership:
- ☐ 4-H only
- ☐ FFA only
- ☐ Both 4-H and FFA
- ☐ Other (specify _____)

6. Agricultural Experience/Background:
- ☐ Livestock only
- ☐ Crops only
- ☐ Both crops and livestock
- ☐ Agri-business only
- ☐ Both agri-business and production agriculture

APPENDIX C

THE LEARNING-STYLE INVENTORY

Learning-Style Inventory: Instructions

The Learning-Style Inventory describes the way you learn and how you deal with ideas and day-to-day situations in your life. Below are 12 sentences with a choice of four endings. Rank the endings for each sentence according to how well you think each one fits with how *you* would go about learning something. Try to recall some recent situations where you had to learn something new, perhaps in your job. Then, using the spaces provided, rank a "4" for the sentence ending that describes how you learn *best*, down to a "1" for the sentence ending that seems *least* like the way you would learn. Be sure to rank all the endings for each sentence unit. Please do not make ties.

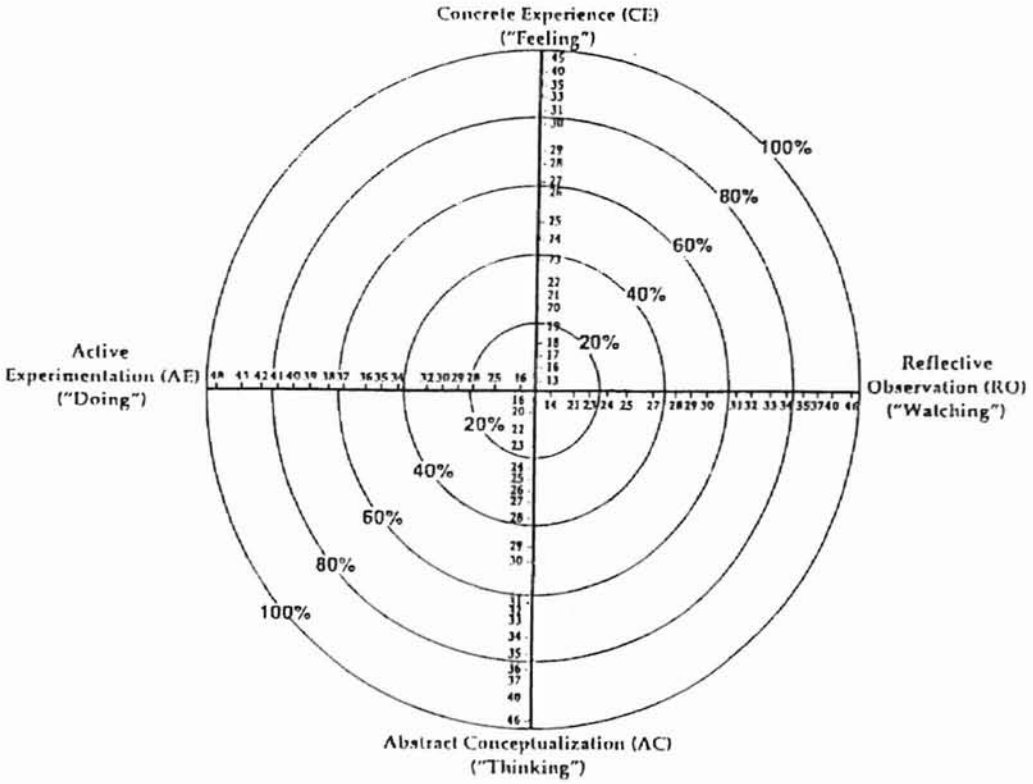
Example of completed sentence set:

	When I learn:	4	I like to deal with my feelings	1	I like to watch and listen	2	I like to think about ideas	3	I like to be doing things
1	When I learn:	___	I like to deal with my feelings	___	I like to watch and listen	___	I like to think about ideas	___	I like to be doing things
2	I learn best when:	___	I trust my hunches and feelings	___	I listen and watch carefully	___	I rely on logical thinking	___	I work hard to get things done
3.	When I am learning:	___	I have strong feelings and reactions	___	I am quiet and reserved	___	I tend to reason things out	___	I am responsible about things
4.	I learn by:	___	feeling	___	watching	___	thinking	___	doing
5.	When I learn:	___	I am open to new experiences	___	I look at all sides of issues	___	I like to analyze things, break them down into their parts	___	I like to try things out
6.	When I am learning:	___	I am an intuitive person	___	I am an observing person	___	I am a logical person	___	I am an active person
7.	I learn best from:	___	personal relationships	___	observation	___	rational theories	___	a chance to try out and practice
8.	When I learn:	___	I feel personally involved in things	___	I take my time before acting	___	I like ideas and theories	___	I like to see results from my work
9.	I learn best when:	___	I rely on my feelings	___	I rely on my observations	___	I rely on my ideas	___	I can try things out for myself
10.	When I am learning:	___	I am an accepting person	___	I am a reserved person	___	I am a rational person	___	I am a responsible person
11.	When I learn:	___	I get involved	___	I like to observe	___	I evaluate things	___	I like to be active
12.	I learn best when:	___	I am receptive and open-minded	___	I am careful	___	I analyze ideas	___	I am practical

APPENDIX D

THE CYCLE OF LEARNING

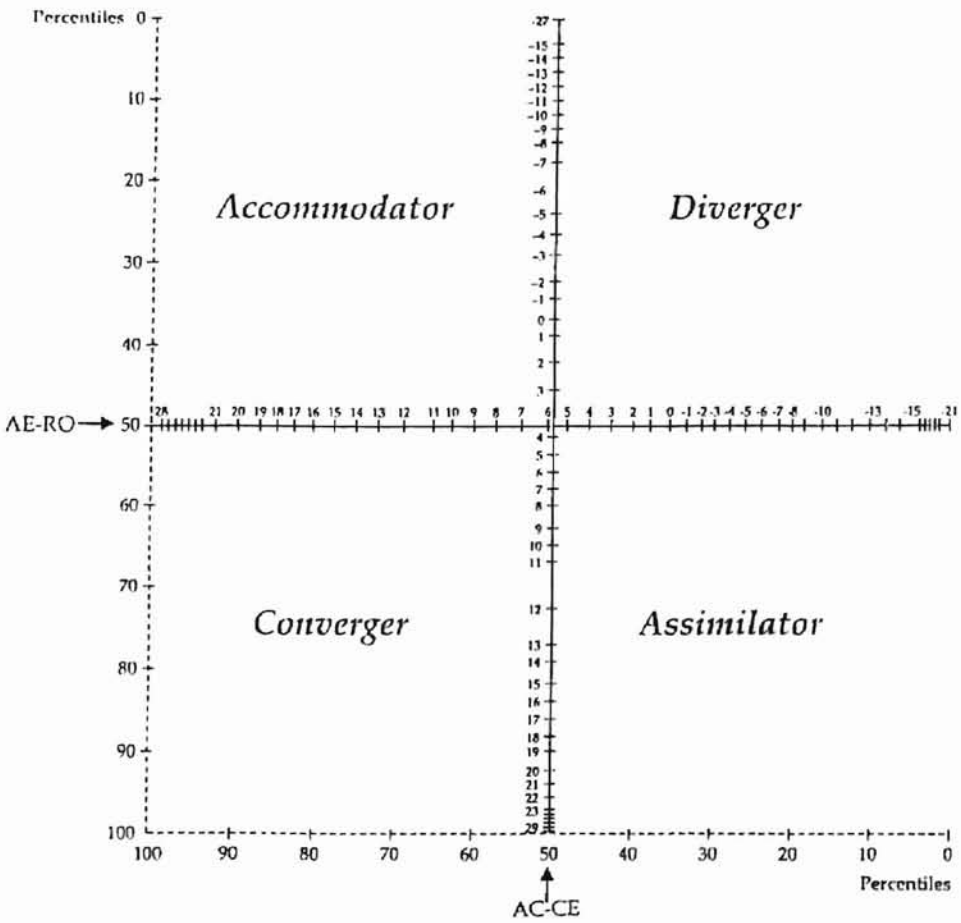
The Cycle of Learning



APPENDIX E

THE LEARNING-STYLE TYPE GRID

Learning-Style Type Grid



APPENDIX F

RECEIPT FOR KOLB'S LEARNING-STYLE INVENTORY

P

McBer and COMPANY INC.
116 HUNTINGTON AVE. * BOSTON * MASSACHUSETTS 02116
PHONE: 617-437-7080 FAX: 617-425-0073

Invoice #: 4,021 Date: 04/25/96
Customer #: 18,938

BILL TO:

Oklahoma State Universit
James D. White
448 Agriculture Hall

Stillwater OK 74078
U.S.

SHIP TO:

Oklahoma State Universit
ATTN: James D. White
448 Agriculture Hall

Stillwater OK 74078
U.S.

TERMS: Net 10 days
SHIP VIA: UPSJ PHONE #: (405) 744-8143

VISA 4731-880-195-001758 02/98

ITEM	QUANTITY	PRICE	DISC.	TOTAL
LEARNING STYLE SERIES				
LSI PROFILE SHEETS	1 @	15.00		15.00
LSI TEST SHEETS	1 @	15.00		15.00
OTHER				
TRG CATALOG	1 @			.00

TOTAL ORDER: $30.00

SHIPPING & HANDLING: $19.00

TOTAL U.S. DOLLARS: $49.00

PAID

Please Send All Payments To:

McBer & Company, Inc.
P.O. Box 8538-153
PHILADELPHIA, PA 19171-0153

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ABA#031201467(FED)
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VITA

Andrew M. Kincaid, Jr.

Candidate for the Degree of

Master of Science

Thesis: LEARNING STYLES OF SELECTED AGRICULTURAL EDUCATION STUDENT TEACHERS AND PROFESSIONAL SERVICE INTERNS AT OKLAHOMA STATE UNIVERSITY

Major Field: Agricultural Education

Biographical:

Personal Data: Born on the Thomas Fredric Nuss, (Grandfather) farm southwest of Stillwater, Oklahoma August 21, 1946, the son of Andrew M. and Emma Kincaid.

Education: Graduated form C. E. Donart High School, Stillwater, Oklahoma May 1964: graduated form Oklahoma Farrier's College in August 1965; received a Bachelor of Science degree from Oklahoma State University, May 1977 with a major in Animal Science; completed requirements for the Master of Science Degree in Agricultural Education at Oklahoma State University May 1999.

Professional Experience: Horse Farm Manager, Midway College, Midway Kentucky; Farm Advisor, Kentucky State University, Frankfort, Kentucky; Cattle Receiving Manager, Oklahoma Feeders, Inc., Coyle, Oklahoma; Outreach Specialist, Langston University, Langston, Oklahoma.

Professional Organizations: Soil and Water Conservation Society; Society of Range Management; Intertribal Agriculture Council; Oklahoma Land Owners and Tenets Association; American Quarter Horse Association; Oklahoma Buckskin Association; Payne County Angus Breeders Association; Texas and Southwestern Cattlemens Association; and Oklahoma Sustainable Agriculture Working Group.