

ADULT EDUCATION PHILOSOPHIES AND
TEACHING STYLES OF CONSTRUCTION
MANAGEMENT FACULTY OF THE
ASSOCIATED SCHOOLS
OF CONSTRUCTION

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Chapter 1

Introduction

Construction Management

The construction industry in the United States is one of the world's leading markets employing 7.2 million Americans and accounting for about 7% of the Gross Domestic Product. In the global market, design firms from the United States received \$5 billion in international billings while general contractors won \$20 billion in foreign contracts (MacAuley, 1997). The construction industry employs 33% more people than food stores and twice as many workers as the automobile industry and service stations combined (Levy, 1994, p. 1).

Construction Management is the control and execution of the four basic resources of labor, material, machinery, and money in the facilitation of a construction project. The primary objective of any construction manager should be to complete each construction project on time and within the specified budget while maintaining a measurable and acceptable level of quality. The scope of Construction Management is broad and includes such topics as construction

contracts, planning and scheduling, construction methods and materials, production and cost estimating, progress and cost control, quality control, and safety (Nunnally, 1980, p. 8).

Construction Management developed as an outgrowth of the design profession. It offered design professionals an opportunity to satisfy contemporary needs for improved construction project control. It allowed this group of professionals to increase their scope of service and degree of influence over a construction project's implementation. Design professionals, who want a key role in the construction process, must develop construction management expertise and organize their practice to perform it properly (DeGoff & Friedman, 1985, p. 202). Construction Management as a field continued to evolve after the development boom of the 1980's when developers used in-house managers to oversee site selection, land development, and new construction (Hoffman, 1998).

There is a predicted shortage of qualified human resources in the construction industry and a need for quality construction education programs (Yates, 1993). The commercial and industrial design and construction market faces labor shortages of 250,000 construction professionals according to the National Center for Construction Education and Research (NCCE, 1998, p. 1). Since engineering schools

house many of the nations Construction Management education programs, this situation is further complicated by the anticipation that there will be 1,500 to 2,500 vacant engineering faculty positions in colleges and universities in the United States by the year 2000 (Yates, 1993, p. 17).

Recently a study (Yates, 1993) examined the diversity of engineering and architecture programs offering Construction Management degrees. A computerized database was developed to disseminate information on engineering programs offering Construction Management degrees. The database contains information on education programs, curriculum, the content of courses, qualitative information, and accreditation data along with an introduction to the construction industry. The database named the Collegiate Program in Construction is a step toward distinguishing between diverse programs of construction for students and potential employers.

Professionals in Construction Management are being developed within engineering and architecture programs throughout the United States. A survey of 155 construction programs revealed that 128 are at public four year universities, and 27 are at private institutions. The most common location for these construction programs is within engineering colleges with 37% found there; other academic

units containing substantial numbers of programs are engineering and technology colleges with 10% of the programs and technology colleges with 9%. Currently there are 35 different designations for academic units that contain Construction Management programs (Yates, 1994, p. 23).

Collegiate Construction Management programs are aligned with several different distinctive academic fields.

"Construction Management (CM) programs historically have emerged from and/or have been affiliated with programs representing other disciplines predominately Engineering and Architecture. It is fair to say that the field has frequently struggled to find an identity of its own" (Hauck, 1998, p. 131).

Construction Management is an emerging dynamic field that formed its content from the systematic disciplines of Engineering, Architecture, Business, and Technical and Industrial Education. However, the teaching of Construction Management involves adult learners. Therefore, the field of Adult Education has implications for how this content is presented to those in the field.

Adult Learning

A number of works have been published detailing and defining adult learning (eg., Brookfield 1984, Houle, 1961; Kidd, 1959; Knox, 1977; Knowles, 1978; Lindeman, 1926;

Merriam & Caffarella, 1991; Thorndike, 1935; Tough 1971). Works such as these have dispelled many myths about the ability of adults to learn. "One of the most decisive checks to outworn notions came with the printing of E.I. Thorndike's book, Adult Learning in 1935. Upon its publication the book was hailed as a foundation stone for adult education and was widely quoted" (Kidd, 1959, p. 25). Thorndike (1935) clearly challenged the misconception that people stopped learning once they reached adulthood.

For thousands of years it was an avowed or tacit assumption of human education that learning belonged primarily to infancy and childhood. People did and should learn then most of the facts, principles, habits and skills which they used later years. The young were supposed to amass a store of information and ability, the income from which supported them through life. This assumption, though questioned occasionally by thinkers, persisted as an accepted and acceptable basis of orthodox theory and practice until recently. It is now seriously challenged for two reasons that it would be unfortunate under present conditions if it were true, and that it is in fact false. (Thorndike, 1935, p. 1)

Adult learning does differ from how children learn, and a theory of adult learning was identified and labeled as "andragogy" by Knowles (1978). Malcolm Knowles (1978) brought forth the word andragogy to describe the learning process for adults and believed that adults are self-directed learners, that adults accumulate a unique set of life experiences, that adults should be responsible for

their own learning, and that adults want immediate application of what they learn (Knowles, 1978, pp. 55-57).

Adult Education Philosophy

Adult Education is a diverse field with at least a dozen distinct philosophical points of view being held by practitioners in adult education (Kidd, 1959, p. 28).

"Philosophies of education are interested in analyzing and clarifying concepts and questions central to education" (Noddings, 1995, p. 4).

Philosophers deal in theories, a word of Greek origin suggesting a beholding, a spectacle. For the ancient Greeks to theorize was to look at, to behold, to have vision (Elias & Merriam, 1995, p. 2). "The whole of life is learning, therefore education can have no endings. This new venture is called *adult education*--not because it is confined to adults but because adulthood, maturity, defines it" (Lindeman, 1926, p. 6). The beliefs about the way adult education should be practiced are referred to as philosophies and are the general principles guiding that practice (Beder, 1989).

The philosophical underpinnings of education date back to the Greek philosophers and their views of the universe. "Idealism is perhaps the oldest systematic philosophy in western culture" (Ozman & Carver, 1981, p. 2). Idealists

believe that the teacher is an important ingredient in the instruction of the young. The idealist is not primarily concerned with specific technical skills but in giving them a broad understanding of the world in which they live (p. 23). Man's freedom and free will are central to the writings of Plato and Aristotle. "Plato has been called an Idealist because he thought that the real world was a world of ideas. Some students of his philosophy say that it would be truer to call him an 'Idea-ist' since he was interested in ideas" (Frost, 1942, p.12).

"Plato's model of education is 'functionalist'--a model designed to produce competent adults to meet the needs of the state. Plato developed his thought on education in the context of describing the ideal state" (Noddings, 1995, p. 10).

People who seek a single principle to guide their lives, said Aristotle, usually choose one of three: pleasure, glory, or contemplation. Those drawn to the first two may study to heighten their pleasure or enhance their glory, and manuals(such as those of Ovid or Machhiavelli) have been written to help them. But the third principle is that of learning for learning sake, accepting it as the ultimate road to happiness and thereby adopting a way of life whose central activity is education. (Houle, 1984, p. 173)

The influence of these early philosophers impacts the history and development of the Liberal Arts approach to education. "Liberal education produces a person who is

literate in the broadest sense--intellectually, morally, spiritually and aesthetically" (Elias & Merriam, 1995, p. 26).

Realism is also considered one the oldest philosophies in Western culture and dates back to ancient Greece (Ozman & Carver, 1981, p. 40). One of the central problems of classical realism was its failure to develop an adequate methode of inductive reasoning. The two most outstanding realist thinkers were Francias Bacon and John Locke. They developed systematic methods of thinking and ways to increase human understanding (p. 47).

Modern behaviorism is allied with the inductive methods of Francias Bacon and the realist philosophy of that era (Elias & Merriam, 1995, p. 80). John B. Watson used an extension of Pavlov's techniques on an 11-month old child to demonstrate Behaviorism (p. 82). He argued that emotional responses combined with motor reflexes can be conditioned to evoke reflexes. The student role in behavioral education is active rather than passive. The environment is arranged in such a way that certain student behaviors are emitted with desirable behaviors reinforced (p. 88). Thus began the philosophy of Behaviorism that continues today.

The root of the word pragmatism is a Greek word meaning "work". Pragmatism is a philosophy that encourages people

to seek out the processes and do the things that work best to help them achieve desirable ends (Ozman & Carver, 1981, p. 80). In the pragmatic view, education should not be looked upon as preparation for life but rather as life itself (p. 97). "The chief exponent of pragmatism and progressive thought, especially as it related to education, was John Dewey. This American philosopher was involved in all aspects of the progressive movement: politics, economics, social reform, and education" (Elias & Merriam, 1995, p. 48).

Progressivism has had a greater impact on the adult education movement than any other single school of thought (Elias & Merriam 1995, p. 45). "American's best-known educational philosopher, John Dewey, proposed that we evaluate schooling by its success in creating in the student the desire for 'continual growth' and in supplying the student with the means for making that desire effective in fact" (Smith, 1982, p. 17). This orientation to personal growth is closely related to humanism (Elias & Merriam. "That Dewey's pragmatism gives rise to humanist outlook is not surprising. The connection between pragmatism and humanism is, in fact, a historical one" (Wain, 1987, p. 177).

Humanism is a philosophy that holds sacred the dignity

and autonomy of human beings and draws much from the liberal adult education philosophy (Elias & Merriam, 1995, p. 109). The roots of the philosophy traces back to Aristotle, Plato and others. "Aristotle believed as Plato did that people should be educated or trained for their appropriate place in life" (Noddings, 1995, p.12).

Another important philosophy of adult education is the Radical adult education movement. "Radical educational thought stands outside the mainstream of educational philosophy. Most educational philosophies accept the given societal values and attempt to propound educational philosophies within these value structures (Elias & Merriam, 1995, pp. 139-140).

Three sources of Radical educational thought are: the Anarchist tradition, Marxist-Socialist tradition, and the Freudian Left. Radicals are strong on societal criticism and often provide alternative utopian futures. Connection with the radical tradition can make adult educators more critical and reflective in their work and can provide insight into alternative and future possibilities. (Elias and Merriam, 1995)

Teaching Style

Teaching style refers to an instructor's characteristic behavior in the teaching-learning situation. Educational

philosophy is a critical factor in determining an instructor's personal teaching style (Conti, 1991, p. 89). One's teaching style can also be impacted by experiential background. There is evidence that teachers begin an instructional session with the type of learning activity that they prefer and gravitate toward methods they find useful (Smith, 1982, p.54).

One's educational philosophy can be formulated through an examination of values, beliefs, and attitudes that are related to the teaching-learning exchange (Heimlich & Norland, 1994). When behavior is added to this picture, teaching style emerges, because teaching style is the distinctive qualities displayed by teachers that are persistent in situations regardless of content (Conti, 1991).

While personal philosophy provides an overall basis for decisions about appropriate actions, the teacher's behavior will vary in addressing each of these unique classroom situations. The amount of this variance will be limited by tenets of the teacher's educational philosophy and by the strength to which the teacher adheres to that educational philosophy. The way in which the teacher consistently functions within this range defines the teacher's teaching style. (Conti, 1985, p. 4)

A relationship does exist between the instructor's teaching style used in an adult education setting and a student's achievement (Conti, 1985). In studies with groups

such as health professionals (Conti & Welborn, 1986) and tribal college students (Conti, 1989) teaching style was found to be significantly related to student achievement. The studies emphasize the importance of practicing a consistent teaching style.

Statement of the Problem

Construction Management is a dynamic field involving adult learners. Although the field is embedded in several traditional areas of higher education, it should be employing adult learning principles to implement effective real-life learning. "We want students not just to gain some knowledge, but to be able to apply their knowledge. This is true whether we are teaching technical courses within Construction Science, or we are teaching courses such as psychology" (Hall, 1998, p. 26).

Application of adult learning principles can facilitate the learning process. "By making it directly, frequently, and immediately pay off for students to do things professors want them to do, professors can alter what and how students learn" (Hall, 1998, p. 30).

A self-knowledge of educational philosophies and teaching styles can help Construction Management faculty understand why they teach the way they do. This in turn can stimulate improvements in practice. "In recent years, there

have been many efforts made to improve the outcomes assessment processes used to evaluate the effectiveness of undergraduate programs in Construction Management" (Hauck, 1998, p. 172).

Although a knowledge of educational philosophies and teaching styles of those faculty teaching in the collegiate Construction Management programs in the United States could help stimulate more effective construction education and professional development, data related to this have not been gathered. However, the educational philosophy and teaching style of faculty within the Construction Management field could be measured by using two established instruments from the field of Adult Education. The Philosophy of Adult Education Inventory was developed by Dr. Lorraine Zinn in 1983. The instrument can provide a picture of one's personal adult educational philosophy. The Principles of Adult Learning Scale, which was created and developed by Dr. Gary Conti in 1978, can measure teaching style in adult education situations. Although both of these instruments have been used in previous studies of other teaching professionals, these instruments have not been used to determine the teaching styles or educational philosophies of Construction Management faculty within the colleges and universities offering degrees in the field.

Purpose

This study identified the educational philosophies of construction management faculty using the Zinn Philosophy of Adult Education Inventory and teaching styles of the study group using the Principles of Adult Learning Scale. Construction Management faculties have diverse credentials derived from multiple disciplines. This study examined how these diverse instructors approach the teaching-learning process with their adult learners. Participants in this study were faculty members within construction education programs within four-year colleges and universities in American.

Research Questions

1. Using the Philosophies of Adult Education Inventory . PAEI, what are the adult education philosophies of Construction Management faculty?
2. Using Principles of Adult Learning Scale PALS, what are the preferred teaching styles of Construction Management faculty?
3. What is the relationship of adult education philosophy as measured by PAEI and the demographic variables of age, gender, and faculty credentials?
4. What is the relationship of teaching style as measured by PALS and the demographic variables of age, gender,

and faculty credentials?

5. What is the interaction between philosophical beliefs and teaching styles of Construction Management faculty?

Definitions

ASC: The Associated Schools of Construction a 94 member organization of universities with Construction Management programs in the United States.

Construction Management: Construction Management is the control and execution of the four basic resources of labor, material, machinery, and money in the facilitation of a construction project (Nunnally, 1980, p. 8).

Educational Philosophy: "When the adult educator engages in the practice of education, certain beliefs about life in general are applied to the practice. These beliefs about life in general constitute the basis for a philosophy of education" (Zinn, 1990, p. 40).

National university: National universities offer a full range of undergraduate majors as well as master's and doctoral degrees. Most place emphasis on research and federal funding for research (Smith, 1998, p. 37).

PAEI: The Philosophy of Adult Education Inventory measures one's adult education philosophy.

PALS: The Principle of Adult Learning Scale is an instrument which measures one's teaching style.

Regional university: Regional universities offer few doctoral programs. However, they do offer a full range of undergraduate and master's degrees. Research is not of major importance in these institutions (Smith, 1998, p. 47).

Teaching Style: Teaching Style refers to the distinct qualities displayed by a teacher that are persistent from situation to situation regardless of the content (Conti, 1991, pp. 80-81).

CHAPTER 2

REVIEW OF RELATED LITERATURE

Construction Management

Construction Management as a discipline is represented in 155 university programs in the United States (Yates, 1994, p. 2). More than 90 of these university programs are regional and national universities and are members of The Associated Schools of Construction. These programs have emerged from and have been affiliated with several other academic disciplines, predominately with the areas of architecture and engineering (Hauck, 1998, p. 131).

During the seventies, the academic discipline of Construction Management evolved to the departmental level in many universities in the United States. However, an unusual paradox has developed as Construction Management (CM) has become a separate discipline. "It is generally believed that the strength of an individual CM program is positively correlated with its level of autonomy from other departments or disciplines, but that degree of independence leaves those autonomous programs targets in the struggle for limited

resources and university recognition" (Hauck, 1998, p. 132).

Public opinion and perceptions of construction are not generally very positive. A common struggle is that a job in construction industry is one that a person gets when no other job opportunities exist. Unfortunately, those within the construction industry have done little to modify public perceptions. In a recent study investigating the relationship between student empowerment, attitude and motivation toward construction management course work and professional construction management, several key elements were found to influence entry into the construction management field. These elements were related to previous construction experience, construction management program curriculum, and job placement opportunities. (Swoboda & Cleslik, 1997, p. 287).

The public considers architects and other design professionals open-minded and artistic. However, in some public opinions, professional construction has a lessor reputation. It is perceived as a field which includes individuals who are stubborn, physical slobs, contractual cheats, sexist, and always unclean or dirty (Williamson & Grankowski, 1997, p. 188).

Within professional construction as opposed to the design professions, there is little public evaluation or

praise concerning the value professional construction provides to the common society. For example, corner stones often do not list the building's constructor. Attitudes shaped over many years of learning and experience are not usually very flexible, the impact of negative cultural opinions cannot be ignored within construction education or in the construction management profession (Williamson & Grankowski, 1997, p.188).

As students perceptions of their practical abilities increases, so does their personal attitude toward construction course work and professional construction. This gives support to the practice of programs requiring students to be involved in internships or to work at construction during the summer months. Practical experience is not only one of the best teachers but also provides students with an enduring disposition and excitement toward success in their own course work and profession (Williamson & Grankowski, 1997, p. 189).

There is an indication that students indeed do enter into the construction course work with poor attitudes and motivation concerning their educational standing and the value of a construction profession. However, as they progress toward graduation this belief system is modified to be a responsible positive outlook to their future; this is

true not only in construction education, but also for construction as a profession of choice (Williamson & Grankowski, 1997, p. 189).

The Construction Curriculum

The construction curriculum is developing and reforming to meet the needs of the dynamic global construction industry and those of academia. "To meet the requirements of numerous accreditation bodies and to determine ways to improve the delivery of undergraduate education in construction management there have been significant discussions of outcomes assessment in recent years" (Hauck, 1998, p. 172). Many different stakeholders have contributed to the field of Construction Management. However, both industry and academia are equal in driving the future of the field.

The goal of many national construction education programs is to achieve and maintain national and international recognition as premier sources for dynamic, practical and innovative building construction knowledge. The cornerstone of building a strong construction education curriculum is balancing practical experience based knowledge with academic inquiry. To accomplish this goal our graduates must possess technical strength combined with the people and communication skills necessary to be successful in the global construction industry of the Twenty-First Century. (Mills, Auchey, & Beliveau 1997, p. 25)

Construction education must provide the opportunity for students to master the competencies necessary to succeed in

the 21st century as a building constructor. The student will have to compete in a changing global market-place. A horizontally and vertically integrated curriculum would balance the construction education concepts of practical experience based knowledge with academic inquiry. It would be a dynamic, practical, applied academic model, providing a construction program that maintains a strong identity positioned between architecture and engineering. The model would integrate people and communication skills with pragmatic building construction skills (Mills, Auchey, & Beliveau, 1997, p. 25).

Curriculum integration is the fostering of unity between the learning process and the learner. What occurs through integration is the integration of student behavior. Knowledge becomes experience and experience becomes knowledge, thus begetting wisdom. The learner becomes the teacher and continues to learn long after the teacher is out of the picture (Mills, Auchey, & Beliveau, 1997, p. 26).

The world construction market is growing rapidly with many employment opportunities abroad. The graduate of the future may manage construction projects just about anywhere in the world.

It is becoming imperative that faculty seek ways to prepare students for the globalization of the industry. There are three major reasons that faculty should strive to incorporate cultural

awareness in course content: 1) to facilitate successful project management; 2) to prepare for the adoption of an international building code by the year 2000; and 3) to provide expertise in technical communications with an international market. (Kiisk, 1998, p. 209)

Estimating and its importance to the building and construction firm cannot be overemphasized. Many of those in contracting believe that graduates will learn more about the construction industry as a whole from the estimating process in their first two years than those graduates employed as construction project managers or assistant superintendents (Kirk, 1998, p. 55).

Students need to learn how to teach themselves by applying knowledge and reinventing the world around them. Many courses in construction lend themselves to this application of knowledge. And, since estimating is vital to any construction company, estimating should be taught in an application-based, realistic approach and away from the objectivism approach which is prevalent in many construction curriculums. How, then, can we teach estimating effectively given the small amount of time that most curriculums devote to the subject? The solution is relatively simple. Teach estimating in an application-based format. (Kirk, 1998, pp. 62-63)

“Reading and writing skills need more emphasis in the Building Construction Management curriculum. In order to enhance writing skills, students need to practice writing. Not only do students need to practice writing, they need to practice writing within the subject matter being taught” (Ray, 1999, p. 21). It is important that students

recognize writing as being critical to successful construction project management, and that the ability to write clearly, completely, concisely, and accurately is a skill which requires significant practice (p. 21).

“The importance of possessing competent writing skills for the successful completion of projects is paramount to the construction industry. Employers demand that entry-level employees effectively write as topics relate to specific conditions of the contract” (p.28). However, it is the individual construction management student who must make the effort to become proficient in construction writing and documentation (Ray, 1999, p. 28).

The addition of writing skills to the curriculum can be accomplished by integrating this writing emphasis into specific application courses in the university construction management curriculum. The student will become a better writer and a more informed construction professional through mastery of these courses (Ray, 1999, p. 28).

The foundation of business decision making is financial analysis. There are many different evaluation tools currently available to construction managers. This tools include a host of construction related computer software. These financial skills are not normally taught in the undergraduate construction management curriculum. However,

the graduate student is likely to be initially employed in a position which does require sophistication of management methods, including financial analysis. While most graduates may have heard of some of these tools, they probably could not effectively utilize them effectively within a construction firm's analytical framework (Berryman & Nobe, 1999, p. 32).

“As educators of future professionals of the built environment, at least one of our primary objectives should be to develop knowledge and skills which are needed by society” (Nobe & Berryman, 1997, p. 109). The eventual job placement of Construction Management graduate students is often narrow in its scope as many find employment only in the construction management arena. The construction phase of property represents only one fraction of the time that property requires the talents of the management professional. Property management, specifically the operational aspects, are perhaps best filled by individuals with training more directly focused in the property management arena. However, continued management of the physical aspects of the property requires knowledge in construction related areas such as contract bidding and administration, estimating and scheduling, and materials and methods.

If a broader understanding of the real estate development process and the unique characteristics commonly associated with investment in this area can be established in the graduate Construction Management curriculum, then the employment horizon for graduates of Construction Management can be longer and more diversified. Real estate development is a lengthy process with the majority of time being consumed by on-going management of the property. Real property has unique characteristics, primarily physical immobility and long economic life, which are typically considered risk factors to the investor, there is a virtually continuous opportunity for construction managers to serve in the area of property management. Cumulative trends of real estate in place support this supposition. The requirements of reserve fund analysis, and the core curriculum of graduate construction education are closely aligned. This evidence suggests that there is demand for professionals trained in construction to produce reserve fund analysis. Unfortunately, very few schools appear to currently be offering either a course or concentration in either facilities management and/or reserve fund analysis (Nobe & Berryman, 1997, p. 118).

The construction business is filled with contract claims because of all of the inherit risks expected within

the day to day operations of companies within the industry. The amount of risk in each construction project correlates directly with the number and type of variables. Variables within construction that produce risk include the owner, architect, contractor, subcontractors, and vendors; the weather; the economy; and the land where the project stands (McDevitt, Bovis & Jensen, 1998, p. 2).

Many legal issues exist in the construction industry. Therefore, the construction management curriculum should contain segments that cover many aspects of law. Graduates will face a world filled with legalistic perils. The statute of limitations restricts lawsuits from being filed sometime after claims arise. Statutes of Repose prevent lawsuits from being filed sometime after the completion date of a building or construction project. Statutes of Repose protect general contractors, architects, engineers, and owners. However the extent to which these statutes protect manufacturers and building material suppliers to the construction industry varies with the jurisdiction (White & Holland, 1997, p. 231).

Curriculum to initially introduce construction students to the legal system can be an interactive activity. A creative activity designed to facilitate students through the inner working of the law was created by Dr. Nancy White

at Texas A&M University. The curriculum uses the analogy of a river and its many branches to demonstrate the flow of law from trail courts to appellate courts. A visual representation of these concepts enhances the curriculum and further facilitates learning. The activity is called *The River Of Law* (White, 1998, p. 38). The curriculum in construction law should be very detailed and diverse to serve the needs of graduates entering the global construction workforce.

Ethics has not been a clear-cut issue in the construction business environment or in the construction management classroom. There have been many attempts in the last twenty years to curb ethical transgressions in the industry. Professors and instructors in Construction Management have an opportunity to influence individuals. Ethics should be integrated into every aspect of the construction management process. In other words, ethics should automatically be involved in the decision making process (Jackson & Murphy, 1998, p. 204).

Construction Management programs should take a very active approach to ethics education. By addressing the concerns of the industry and discussing the implications of certain ethical behaviors to all stakeholders involved in the construction industry as a whole, construction

management educators may influence the next generation of construction managers and industry executives. Ethics and principles should be integrated into every aspect of the construction management process (Jackson & Murphy, 1998, p. 205).

The emphasis in construction ethics instruction should be on developing individual ethical thinking processes within the Construction Management student. Construction Management programs and individual construction management professors should concern themselves with the messages being delivered in the classroom regarding ethics and how they relate to the real-world construction industry. Many contemporary Construction Management professors do communicate their own ethical views, whether intentionally or inadvertently, and they influence the perceptions of students (Jackson & Murphy, 1998, p. 205). Purposeful ethical lessons can be integrated into the construction curriculum and good ethical conduct by professors should be expected. This provides a model for students to mimic.

Other areas of study found within many Construction Management curriculums include equipment management, systems approach, use of the worldwide web, mechanical systems, information flow in construction. Much of what is found in the construction curriculum originates in construction

practice.

Systems thinking is mentioned in textbooks and the systems approach manifests itself in the construction workplace. The systematic nature of the construction process seems to mesh well with the systems concept.

As builders try to remain competitive, and especially as their volume increases, companies are being forced to improve their organizations and systems to handle production in a more efficient way. Builders are feeling the need for greater standardization within their companies. Initializing a systematized approach to the construction process has reaped abundant rewards for some builders and has generated some not-so-obvious benefits. (Rogers & Christofferson, 1999. P. 80)

Students can gain dramatically if Construction Management curriculums are updated regularly to include courses that teach what is currently practiced in the field.

"Successful curriculum reform has been listed as the primary reason university programs in construction management implement active outcomes assessment programs" (Hauck, 1998, p. 174). The final result of outcome assessment programs should be a newly redesigned curriculum which is more responsive to desirable outcomes which have been identified by the faculty. By creating a means of observing the bigger picture, creative solutions to future curriculum challenges can be accomplished without fear of a negative impact on the outcomes of instruction (p. 190).

Experiential Learning In Construction

There has not been a singular formula for integrating practice into construction education. This has occurred for several reasons. There are many variables in a construction project, and these variables can be interrelated in so many different ways. Many situations in construction management are commonly uncertain and ambiguous. Most decisions in construction management are made with the benefit of experience with cases or situations which have been previously encountered. This creates the major challenge for Construction Management educators. The challenge is producing curriculum that allows students to learn how to integrate the required elements and make appropriate decisions (Senior, 1998, p. 146).

For hundreds of years, professional education in the construction fields consisted of an apprenticeship with relative few collegiate requirements; only in the last two centuries did classroom education gain the favor it now enjoys among educators (Senior, 1998, p. 145). The current Construction Management curriculum in many universities does contain opportunity for forms of experiential learning.

To achieve an effective mix of learning modes, the Construction educator might combine laboratory experiences, group exercises, and audiovisual components with lectures.

Approaches such as these are critical for effective Construction Management education. Practical activities are can be as important as theory in this discipline. One of the best laboratories for construction management is the construction project itself. There is no substitute for knowledge derived from guided experience in the field (Senior, 1998, p. 145-146).

"Perhaps professors shouldn't have to motivate their students, but the reality is that professors can motivate their students. By making it directly, frequently, and immediately pay off for students to do the things professors want them to do, professors can alter the choices that students make and ultimately alter what and how students learn" (Hall, 1998, p. 29). Further, some students could learn how to motivate themselves from observing their professors and from experiencing the successes in completing what they were motivated to do (p. 30).

Construction concepts are being taught at the University of Northern Iowa utilizing previous course work to plan, research, and solve problems pertinent to the field. The intent of the class, Special Topics in Construction, revolves around the concept of students utilizing previous course work to plan, research and solve real-live construction-industry problems. Construction

students have demonstrated they can handle undergraduate research projects and work closely with several representatives of the construction industry to solve problems pertinent to the field. The approach is to involve students in teams of two or three with a construction company to solve a real management-related problem. Each of these teams has the opportunity to conduct a planned research project, function in a management capacity, and become directly involved with representatives of the construction industry (Egger, Varzavand, Lyle & Rod, 1997 p. 35). The course objectives center on developing the students' management skills and included the ability to plan, implement, and carry out an efficient and effective research project with the students functioning in a middle-level management capacity with an emphasis on time management communication skills, goal setting, problem identification, development of team problem solving and presentation skills (p. 39).

With guidance and direction, students can gain a professional experience pertaining to current problems in the construction industry. Viable topics such as Management Information Systems, Total Quality Management, and American Disability Act can be adequately researched from an academic and industry setting. The interaction of students, faculty,

and industry representatives a problem-solving arrangement in the form of an outreach program which encourages a sharing of information and ideas. Students gain a more realistic outlook on putting research into practice (Egger, Varavand, Lyle & Rod p. 39).

Construction is a broad diverse field which involves producing homes, buildings, structures, roads, highways, and bridges. Those involved in construction are faced with solving complex problems on a regular basis using human resources, equipment, building materials and sometimes complex mechanisms. Construction managers must possess the ability to visualize and plan, to think creatively and intuitively, and deal with accuracy, time constraints and lineal sequences (Kirk & Mulligan, 1997, p. 4)

Is construction an art, or a science? Those from an engineering background would likely reply a "science." They relate to the mathematic and convergent thinking aspects, and probably interpret the word "art" as representing paintings and sculptures created by artists. Those with an architecture background relate to the design aspects, and would probably respond with an "art." However, the response of a construction management faculty member would most likely be 'both' or 'neither'. (Kirk & Mulligan, 1997, p. 4)

In postsecondary education and particularly in construction education, the left side of the brain is the side of the brain most commonly educated. The left side of

the brain is the side of the brain with analytical and systematic thought. At the same time, we ask students to think creatively without adequately developing the right side. The right side of the brain is considered the creative hemisphere of the brain. Enhancing critical thinking by exercising the right brain shows great promise for students in construction programs. Students need to develop both the left and right sides of brain to fully develop their thinking processes to increase their chances of success in the construction industry (Kirk & Mulligan, 1997, p. 13).

Adult Learning

Throughout life, people remember, think, and solve problems. During adulthood the process by which people modify their performance in family, occupation, and community roles partly reflects such cognitive activities (Knox, 1977, p. 405). The transition from childhood to adulthood and the identification of what constitutes an adult learner can be understood by observing the activities in which they participate.

It is my own observation that those students who have entered a professional school or a job have made a big step toward seeing themselves as essentially self-directing. They have largely resolved their identity-formation issues; they are identified with an adult role. Any experience that they perceive as putting them in the position of being treated as children is bound to interfere

with their learning. (Knowles, 1978, p. 56)

Because adults typically want to use what they learn soon after they learn it, it is usually easy to establish the connection between specific learning activities and the area of performance to which the new knowledge is to be applied (Knowles, 1978, p. 58). Substantial adult learning occurs informally as adults seek to understand and deal with changes in their roles as family members, workers, citizens, and users of leisure as well as in more formalized educational and therapeutic settings (Knox, 1977, p. 407).

Learning can occur throughout the developmental stages of adulthood and in many different settings; only some of this can be designated educational in terms of formal adult education provision (Brookfield, 1984, p. 1).

Certain facts and principles are obvious. The earlier an adult receives any given education the longer he has it to use. The longer its interval between learning and use, the greater the loss from forgetting. The best time for learning is, then, other things being equal, at or soon before the time of use. (Thorndike, 1935, p. 115)

Those trying to teach adults or who study the best methods of teaching the mature mind are often oriented toward goals, activity, or learning for its own sake. The educator of adults may maintain that learning should always begin with a definition of a need or interest which gives rise to a goal which prescribes to the learning processes

and the method of measuring results (Houle, 1961, p. 52). Learning is a worthwhile pursuit which requires no other justification (p. 53).

"Adult education presumes that the creative spark may be kept alive throughout life, and moreover, that it may be rekindled in those adults willing to devote a portion of their energies to the process of becoming intelligent" (Lindeman, 1926, p. 87). Adult education presents a challenge to static concepts of intelligence, to the standard limitations of a conventional education, and to the theory which normally restricts educational facilities to an intellectual class (p. 26).

Malcolm Knowles (1970) brought forth the word andragogy to describe the education of adults. Andragogy is based on the beliefs that adults are self-directed learners, that adults accumulate a unique set of life experiences, that adults should be responsible for their learning, and that adults want immediate application of what they learn (Elias & Merriam p. 132, 1995).

This assumption is that as an individual matures he accumulates an expanding reservoir of experience that causes him to become an increasingly rich resource for learning, and at the same time provides him with a broadening base to which to relate new learnings. Accordingly, in the technology of andragogy there is decreasing emphasis on the transmittal techniques of traditional teaching and increasing emphasis on experiential techniques which tap the

experience of the learners and involve them in analyzing their experiences. (Knowles, 1978, p. 56)

In the modern educational system, it seems to many that it is quite impossible to give students any freedom to learn because there are so many limits imposed from the outside. This is perhaps particularly true at the college level. How can students be set free if this course is a required course which they did not elect to take? How can the instructor let the students pursue their own goals in one section of a large course in which the same text and curriculum is required and the same examinations given in all sections? Would not the instructor be irresponsible in permitting a wide range of choice to students when these same students will be making application to graduate schools and needing solid evidence to support their applications? (Rogers, 1969, p.29)

These questions are entirely reasonable. Yet, a growing number of innovative teachers at the college level have been demonstrating that even when all of these constricting conditions are present at the same time, it is still possible to focus on the facilitation of meaningful learning; it is still possible to give students the freedom to learn (pp. 29-30).

The increasing age of the learners in the classroom is a major adjustment for many college professors. Those

instructors used to having the attention of the class merely by the virtue of being the oldest in the class is no longer a reality. Even in the traditional programs older students are enrolled. Along with the age comes experience, most of the students in an adult learning program have a great deal of practical experience. It is up to the instructor to draw upon that experience and use it in the classroom. A positive aspect of older students is that they are usually all there to get an education (Bowden & Merritt, 1995, p. 427).

What are the qualities and attitudes which facilitate learning?

Perhaps the most basic of these essential attitudes is realness or genuineness. When the facilitator is a real person, being what he is, entering into a relationship with the learner without presenting a front or facade, he is much more likely to be effective. Seen from this point of view it is suggested that the teacher can be a real person in his relationship with his students. He can be enthusiastic, he can be bored, he can be interested in students, he can be angry, he can be sensitive and sympathetic. (Rogers 1969, p. 106)

Children are considered to be naturally curious. When they go to school, however, it is charged that they enter a lock-step system. Their motivation to learn is specific, but the goals of the school are generalized and grow essentially out of our society's expectations. Students quickly grow passive, and schools diminish the natural

curiosity of children, thereby creating a high dropout rate. Colleges and universities must also cope with a high rate of change in major fields of study as young people restlessly seek specializations that appeal to them. When they leave formal schooling, the nature of their motivation continues to be specific. If they study at all, they do so for concrete reasons that vary as they grow older (Houle, 1984 pp. 227-228).

Some psychologists studying learning have done so in the classroom or under contrived conditions in the laboratory. Others have drawn inferences from learning behavior wherever they have been able to observe it. But all agree that learning is most effective if carried on under conditions similar to where the knowledge, skill, or attitude will be practiced. Effective simply means that there is a tendency to utilize and apply what is learned (Kidd, 1959 p. 257). "One of the most important developments in recent years has been many new applications of the 'reality' principle--planning a learning experience that is concrete, vivid, and relevant" (p. 267).

Adult Education Philosophy

"Philosophy of Education is the philosophical study of education and its problems. Unlike other branches of philosophy, it is rarely taught in philosophy departments"

(Noddings, 1995, p. 1). "In one basic sense, we can say that philosophy of education is the application of philosophical ideas to educational problems. We can also say with equal force that the practice of education leads to a refinement of philosophy" (Ozmon & Carver, 1981, p. x). "While the roots of philosophical inquiry can be traced back to ancient Greek philosophy, it has only been in the past two centuries that education has received rigorous treatment by philosophers" (Elias & Merriam, 1995, p. 1).

The earliest philosophers, the Greeks, were greatly interested in solving the mysteries of the universe. Thales, who lived in Miletus in Ancient Greece around 600 BC, was the first person to propose a solution of this problem. He believed that everything originally came from water because water could be found in many forms from ice to steam (Frost, 1942, p. 6).

There were many diverse ideas during this time in history. Another citizen of Miletus, Anaximander, felt the universe was not made of water but of living mass which contained motion. The motion caused pieces of the living mass to break off the universe was formed from this process (Frost, 1942, p. 6). A third citizen Miletus, Anaximines, believed that both of the previous accounts of what the universe was made of were wrong. He believed that air was

the original substance from which everything in the universe was made from. These three were perhaps the first philosophers to try to solve the mysteries of the universe. They were followed by many other philosophers, and thus philosophy began as a way of solving the mysteries of the universe (p. 7).

Idealism

Idealism is likely the oldest systematic philosophy in Western culture, dating back at least as early as Plato in ancient Greece. While, there were philosophers and philosophy prior to Plato, it was Plato who developed one of the most influential philosophies dealing with education (Ozmon & Carver, 1981, p. 2). Socrates preceded Plato in early Greece. Much of what is known of Socrates comes to us entirely from the writing of his disciples, namely Plato. Socrates taught by engaging others in dialogue, not by writing. Students associate him with the Socratic method which is used in law schools to stimulate discussion (Noddings, 1995, p. 6).

Socrates was most interested in the problems related to a good life. Therefore, a great deal of his teaching dealt with the meaning of right and wrong. Socrates spent his life trying to help men discover what is good. Plato took up the problem of good and evil where Socrates left it. For

him, goodness is tied to his theory of nature of the universe (Frost, 1942, p. 84).

"One of the perennial questions in philosophy of education centers on who should be educated and how" (Noddings, 1995, p. 5). This question deeply interested Plato. He discussed society's needs and the varieties of human talent. From an elaborate set of premises about the nature of real and utopian societies and the nature of human beings, he derived his recommendations for education (p. 5).

The aim of education was to produce the good and virtuous man. In Plato's case, the highest ideal was the philosopher-king who knew what was true and of value and who could govern according to these principles. The aim of education was to be met through a rigorous intellectual training that began with a knowledge of grammar and rhetoric; was extended to the natural sciences, history, and literature; and was completed with a study of logic and philosophy (Elias & Merriam, 1995, p. 14).

The value Plato's ideas is that they have stimulated a great deal of thinking about the meaning and purpose of man, society, and education. Plato influenced almost all philosophers who came after him whether they supported or rejected his basic ideas (Ozmon & Carver, 1981, p. 6).

In general, Idealists have shown a great concern for

education, and many have written extensively about it. Plato made education the central core of his utopian state, the Republic (Ozmon & Carver, 1981, p. 15). Idealists generally agree that education should not only stress development of the mind but should encourage students to focus on all things that are of more lasting value (p. 16). To do this, Idealist place a heavy emphasis on the content being taught and upon the teacher who is an expert for teaching this specific content.

The liberal arts approach to education is the oldest and most enduring philosophy of education. The various components of this philosophy are a particular view of man and society, a theory of reality, a view of knowledge, a theory of values, and an attitude toward social change (p. 13). The liberal philosophy had its beginning in the Greek philosophy of Idealism and progressed and became enriched through its encounter with the early and medieval Christian church. The combination of classical Greek philosophy of rational inquiry and the Christian faith produced a liberal curriculum in religious schools (Elias & Merriam, 1995, p. 16).

Liberal education is designed to produce a person who is intellectually, morally, spiritually, and aesthetically literate. An educational process that has been most

appealing in the liberal arts tradition is the critical reading and discussion of classical writings. The educational program of the Great Books used in a number of colleges and among adult groups exemplifies this form of education (Elias & Merriam, 1995, p. 30).

Realism

Like Idealism, Realism is one of the oldest philosophies in Western culture and dates back to ancient Greece. Because of its long history, Realism has many spokesmen and interpretations. The most central thread to Realism is the principle of independence. This philosophy had its development in classical times, was transformed during the scientific revolution, and exists today (p. 40).

Aristotle believed as Plato did that people should be educated or trained for their appropriate place in life. Educators may take a special interest in Aristotle's moral thought because it established a model of moral education still widely popular. Aristotle recommended that children should be trained in morally appropriate modes of conduct. He believed the community should inculcate values in children and immerse them in supervised activities designed to develop relevant virtues (Noddings, 1995, pp. 12-13).

Aristotle was both a scientist and a philosopher, and he believed that although people may separate science and

philosophy artificially, there is a relationship between them in which the study of one aids in the study of the other (Ozmon & Carver, 1981, p. 42). Aristotle brought to philosophy a careful investigation of the components of moral education, intellectual education, and theoretical wisdom, which is knowledge of science, intelligence, and wisdom (Elias & Merriam, 1995, p. 15).

Thomas Aquinas became the leading authority on Aristotle in the Middle Ages. He argued that since God is pure reason, then the universe is reason and that by using our reason as Aristotle suggested, one could know the truth of things (Ozmon & Carver, 1981, p. 46). Aquinas was influenced greatly by the thinking of Aristotle, and he sought to adjust Aristotle and Christian theology to each other without destroying the fundamental doctrines of the Catholic Church (Frost, 1942, p. 112).

The intellectual high point of medieval Christian thought is found in the theological and philosophical system of Thomas Aquinas. Intellectual contemplation was for Aquinas the highest good because it enabled people to gain a measure of knowledge about their destiny and nature (Elias & Merriam, 1995, p. 16).

Modern Realism developed around a scientific approach to problem solving. Of all of the philosophers engaged in

the scientific revolution, Francis Bacon and John Locke are considered the most outstanding realist thinkers (Ozmon & Carver, 1981, p. 47). Francis Bacon introduced into Western thought the inductive method by which one arrived at truth through examination of information gained through the senses alone. John Locke followed Bacon in this viewpoint. He denied the innateness of ideas and explained human knowing through empirical processes (Elias & Merriam, 1995, p. 80).

Behaviorism

Behaviorism is a psychological theory that has its roots in several philosophical traditions. Consequently, it can also be considered as a philosophy. Behaviorism is accepted in the field of education as a philosophy, it has theoretical considerations dealing with the nature of man and society. It has a connection to modern Realism, and its advocacy of science can be made to behaviorism (Ozmon, 1981, pp. 188-189).

John B. Watson became the acknowledged leader of Behaviorism. He used an extension of Pavlov's techniques on an 11-month old child to demonstrate behaviorism (Elias & Merriam, 1995, p. 82). Watson argued that emotional responses combined with motor reflexes can be conditioned to evoke reflexes; this laid the foundation for the philosophy of Behaviorism that continues today. B. F. Skinner, who was

a psychologist, a radical determinist, and a behaviorist, became the successor to Watson (Burke, 1994). Skinner developed operant conditioning, which depended upon stimulus and response, reward and reinforcement to strengthen chances of getting desired results (Bazigos & Burke, 1997).

Behaviorism is seldom found as a fully articulated philosophy of education in adult education. "Probably the most visible articulation of a behaviorist orientation is in the area of human resource development (HRD). This form of adult education is organizationally based, especially in business and industry, where employees are 'trained' to enhance their on-the-job performance" (Elias & Merriam, 1995, p. 215).

Progressivism

Progressive education first developed in Europe. Its origins lie in rationalist, empirical, and scientific thought. After its beginnings in Europe, Progressive education made its way to the United States where it became the predominant influence on adult education (Elias & Merriam, 1995, p. 46). The philosophical basis of Progressivism is pragmatism, an American philosophy that began in the 1870's with the writings of Charles Pierce, William James, and Chauncy Wright (pp. 46-47).

Charles Pierce did not achieve recognition in his own

experience means that every experience both takes up something from those which have gone before and modifies in some way the quality of those which come after" (Dewey, 1938, p. 35).

Dewey frequently wrote about learning as a transaction. He believed that active perception, interpretation, or understanding comes as a result of a transaction in which the interpreter and the interpreted are linked (Kidd, 1959, p. 270). Dewey and other pragmatists believed that education is a necessity of life. In the pragmatic view, education is not preparation for life but is life itself (Ozmon & Carver, 1981, p. 96-97). "In summary, only a few adult educators have taken up the social thrust of the progressive education movement. The learner-centeredness and methodology of the progressives have had a much greater impact on the field of adult education" (Elias & Merriam, 1995, p. 68).

Humanism

Humanistic philosophy and psychology form the foundation of the theory and practice of adult education more than any other single orientation. Individual growth and the development of learners concerns the adult educator more than cultural transmission, changing the social order, or an organization's profits (Elias & Merriam, 1995, p.217).

Humanism is a philosophy that holds sacred the dignity and autonomy of human beings and draws much from the liberal adult education philosophy (Elias & Merriam, 1995, p. 109). The roots of the philosophy trace back to Aristotle, Plato, and others. "Aristotle believed, as Plato did, that people should be educated or trained for their appropriate place in life" (Noddings, 1995, p. 12).

The work of Abraham Maslow is associated with a human need hierarchy where basic needs (food, shelter) make up lower levels and self-esteem, love, and self-actualization are found at the higher levels of the hierarchy (Milkovich & Newman, 1996). "Both Abraham Maslow and Carl Rogers see education as a means of fostering self-actualizing and fully functioning individuals" (Elias & Merriam, 1995, p. 123). "The role of the teacher in a humanistic setting is that of facilitator, helper, and partner in the learning process. The teacher does not simply provide information: it is the teacher's role to create the conditions within which learning can take place" (p. 125).

Humanist theories consider learning from the perspective of the human potential for growth. Humanist refuse to accept the notion that behavior is predetermined by either the environment or one's subconscious. Rather, human beings can control their own destiny; people are free

to act, and behavior is the consequence of human choice (Merriam & Caffarella, 1991, p. 132).

Reconstructionism

"The philosophy of reconstructionism contains two major premises: (1) society is in need of constant reconstruction or change, and (2) such social change involves both a reconstruction of education and the use of education in reconstructing society" (Ozmon & Craver, 1981, p. 120).

"Radical educational thought stands outside the mainstream of educational philosophy. Most educational philosophies accept the societal values and attempt to propound educational philosophies within these value structures" (Elias & Merriam, 1995, p. 139-140). The radical perspective comes from several sources including the anarchist tradition in education, the Marxist-social tradition in education and the Freudian Left (Elias & Merriam, 1995, p. 140).

Anarchism has opposition to national systems of education because of its belief that education in the hands of the state serves the political aspirations of those in power. The central theme of this tradition is to maintain and preserve as much personal autonomy as possible (Elias & Merriam, 1995, p. 140).

As the anarchist tries to promote personal freedom and

autonomy by taking education from state control, the Marxist-social tradition in education attempts to produce the free and autonomous person through a revolutionary change from capitalism to a socialist form of government. Marx did not feel that education had an important role in social revolution. He felt that education was too tied to the dominant classes. Others, including George Counts, Theodore Bramfeld, and Paulo Freire, have used Marxist ideas such as false consciousness, alienation, class struggle, and political revolution (p. 142).

"Counts argued that educators should give up their comfortable role of being supporters of the status quo and should take on the more difficult tasks of social reformers" (Ozmon & Carver, 1981, p. 125). Theodore Brameld is responsible for bringing reconstructionism to the level of a fully developed philosophy. He viewed reconstructionism as a philosophy of crisis, not only in terms of education but also of culture as well (p. 126).

A basic tenant of the Marxist-socialist approach to educational change is its assumption that once people become aware of what they view as evil social structures, they will be able to bring about the necessary changes. The Freudian Left addresses the problems inherent in this assumption. It brings the light the fact that authoritarianism and its

structure prevents many people from acting in their own self-interests because authoritarianism is imposed upon individuals from the earliest stages of child development (Elias & Merriam, 1995, p. 144). "The ideas of the Freudian Left are not influential ideas in adult education today; yet it is important for these ideas to be examined for they raise important questions for the philosophical position of the radical adult educator" (p.144).

Paulo Freire is one of the educational theorists who have emphasized the necessity of using education to raise people's level of consciousness. Freire believes oppressed populations need to know about the forms of oppression and the ways in which a dominate group can exploit their literacy (Noddings, 1995, p. 68). Fundamental to Freirian philosophy were the philosophies of so many others. Freire describes it this way, "I read the why, or some of the whys--the tapestries and fabrics that were books already written and not yet written that would come to enlighten that was forming in me: Marx, Lukacs, Fromm, Gramsci, Fanon, Memmi, Sartre, Kosik, Anges Heller, M. Ponty, Simon Weil, Arendlt, Marcuse, and so many others" (Freire, 1995, p. 18). The influences that brought about Popular Education, the tool used by Freire for rapid social change, were in part derived from other philosophers. One influence was Sartre and his

beliefs. Sartre recognized the pervasiveness of evil, holding that evil could not be redeemed and that each individual is responsible for the evil in the world. The ultimate freedom is the freedom to say no (Frost, 1942, p. 266). Man may not be able to overthrow evil. For Freire, society in Brazil was the evil and the solution was education for the masses, a raising of consciousness. "In any event no reality transforms itself, and the duty which Lukacs ascribes to the revolutionary party of explaining to the masses their own action coincides with our affirmation of the need for the critical intervention of the people in reality through the praxis" (Freire, 1970, p. 35).

The Freirian philosophy is a radical philosophy, his ideas have been disseminated worldwide. Pedagogy of the Oppressed Freire's revolutionary book, has been distributed globally. Published in New York in September 1970, Pedagogy immediately began to be translated into various languages, sparking curiosity, and favorable criticism in some case, unfavorable in others. By 1974 the book had been translated into Spanish, Italian, French, German, Dutch, and Swedish, and its publication in London by Penguin Books carried Pedagogy to Africa, Asia, and Oceania, as well. (Freire, 1995, p. 120)

The immediate world-wide distribution of Freire's book in the 1970's popularized the radical philosophy. "The book appeared at an intensely troubled moment in history. Social movements appeared in Europe, the United States, and Latin America, each with its own space-time and particular

characteristics. There was a struggle with sexual, racial, cultural, and class discrimination" (Freire, 1995, p. 120).

Summary

Although various philosophies exist, the Liberal, Behaviorist, Progressive, Humanist, and Radical philosophies are represented in the Philosophy of Adult Education Inventory (Zinn, p. 40, 1991). As the adult educator engages in the practice of education, certain beliefs about life in general are applied to practice. These beliefs constitute the basis for an individual philosophy of education. The central theme of education is to effect change; the direction of that change is based largely on what individuals and the larger society believe should happen through education (pp. 40-41).

Teaching Style

Teaching style refers to the distinctive attributes exhibited by a teacher that are persistent from situation to situation regardless of the content. Since it cannot be limited to the immediate teaching strategies that are employed to accomplish a specific instructional objective, it cannot be determined by looking at one isolated action of the teacher (Conti, 1990, pp.80-81). Developing a personal teaching style is important to all educators. It is an ongoing and continuous process of exploration, reflection,

and application. The development of a good teaching style is a lifetime process (Eble, 1980, p. 1).

Developing a knowledge of one's teaching style can result from self-study which requires gathering information, assessing the information, and acting on the assessment to become more internally consistent or congruent. This process includes the steps of exploration, reflection, and application (Heimlich & Norland, 1994, p. 3). Exploration is the first step in the cycle of movement toward congruence and improvement. Exploration includes a wide variety of activities such as discovering, naming, creating, defining, placing, and categorizing. Some of what is done is collecting information and to some extent, interpreting of that information (pp. 3-4).

In order to develop a knowledge of one's teaching style, exploration must be followed by reflection. Reflection involves examining all the information gathered about beliefs and behavior. Questioning, comparing, experimenting, considering, assessing, and valuing are activities included in reflection. Reflection creates the opportunity to assess teaching style (Heimlich & Norland, 1994, p. 4).

In the in the final step in developing an awareness of one's teaching style involves application of beliefs. The

teacher is then able to add a new position or behavior into the teaching repertoire. A new stance or a new action has been explored and reflected upon and is now a part of that individual (Heimlich & Norland, 1994, p. 4).

Defining teaching style requires an understanding of the process of teaching and why one teaches. Learning how to teach is not as simple as reading a book. "Several hundred volumes of how-to-do-it books have been published with a sale of millions of copies. So far there is none that describes adequately how to be a teacher. Of course, one might quail if such a book were offered. Still it is somewhat surprising how few books or descriptions there are about the teacher" (Kidd, 1959, p. 301). An important part of the continuing education of the teacher is the development of skills. Each role or style a teacher practices may require a special kind of skill, and a few of these are easily acquired. Skills such as presentation, developing curricula, evaluation, and administration can be practiced and learned, but this happens most readily when one has most need of them. These are not skills to be mastered early at college and always kept burnished and complete; they must be worked over and maintained by utilization (Kidd, 1959, p. 304).

Rogers emphasized the teacher as facilitator concept

and believed the teacher must trust the student to assume responsibility for learning. The methods of facilitation are based on several guidelines developed by Rogers (1969).

1. The facilitator has much to do with setting the initial mood or climate of the group or class experience.
2. The facilitator helps to elicit and clarify the purposes of the individuals in the class as well as the more general purposes of the group.
3. He relies upon the desire of each student to implement those purposes which have meaning for him, as the motivational force behind significant learning.
4. He endeavors to organize and make easily available the widest possible range of resources for learning.
5. He regards as a flexible resource to be utilized by the group.
6. In responding to expressions in the classroom group, he accepts both the intellectual content and the emotionalized attitudes, endeavoring to give each aspect the approximate degree of emphasis which it has for the individual or the group.
7. As the acceptance classroom climate becomes established, the facilitator is able increasingly to become a participant learner, a member of the group, expressing his views as those of one individual only.
8. He takes the initiative in sharing himself with the group-his feelings as well as his thoughts-in ways which do not demand nor impose but represent simply a personal sharing which students may take or leave.
9. Throughout the classroom experience, he remains alert to the expressions indicative of deep or strong feelings.
- 10.) In his functioning as a facilitator of learning, the leader endeavors to recognize and accept his own limitations. (Rogers, 1969, pp.164-166)

The teacher has the challenge of applying knowledge from a diversity of fields into the teaching-learning exchange. The teacher applies psychology, principles of learning, methods of instruction, sociology, communication arts, communication strategies, philosophy, and cultural

anthropology; all of this is to be able to convey some other subject. Teaching is a natural process. Human beings have a desire to and instinctively want to share information, experiences, and ideas with others (Heimlich & Norland 1994, p. 115).

"One of the more or less futile quests of educational researchers over the years has been the identification of the characteristics that distinguish excellent teachers from mediocre teachers" (Knowles, 1978, p. 97). In the past few centuries, much has been written about what goes on in the classroom, and many philosophical stances have developed to explain and defend various classroom actions. Recent research on teaching style indicates that the things that teachers do in the classroom make a difference in how students learn (Conti, 1989, p. 15).

During the past decade, instruments have been developed for identifying the teaching styles of adult educators. Studies have been conducted to explore the impact of these styles on the adult learners. A clear picture is emerging from the research and reinforces the need for teachers to assess their style and for them to reflect on the implications which that style has for their learners in the classroom (Conti, 1991, p. 80).

Teaching style might be viewed as a range of behaviors

in which the teacher can operate comfortably according to a certain value system. While personal philosophy provides an overall basis for decisions about appropriate actions, the teacher's behavior will vary in addressing each of these unique classroom situations. This variance in teaching style is limited by the tenets of the teacher's educational philosophy and the strength to which that philosophy is adhered. The way in which the teacher consistently functions within this range defines the teacher's teaching style. (Conti, 1989, p. 4)

To a great extent, adults learn about things to solve the particular problems they face in life. By being active in the learning process and by relating their experiences to the problem under study, they are able to take responsibility for their own learning. The role of the teacher in the process is organizing and maintaining an environment that facilitates student learning (Conti, 1989, p. 5).

Teaching style is a major influence on student achievement. In a study of health professional, students of teachers with a moderate or intermediate preference for a teacher-centered approach to classroom instruction achieved less than all other students (Conti & Welborn, 1986, p. 21). However, the students of teachers who had a strong

preference for the teacher-centered achieved above the mean. The students of teachers who moderately supported the collaborative mode demonstrated the greatest amount of achievement of all students studied (p. 21). The strongest finding from this study is that teaching style makes a significant difference in student achievement. This implies that teachers need to take a careful look at themselves and their actions. The secret to improving student achievement is not just identifying the unique characteristics of each student such as learning style, but rather it includes a thorough analysis by teachers of their actions (p. 23).

Chapter 3
Methodology
Design

This study utilized a descriptive design. "Descriptive research involves collecting data in order to test hypothesis or answer questions concerning the current status of the subject" (Gay, 1996, p. 14). Descriptive data is generally collected through a questionnaire survey, an interview, or observation.

Many types of descriptive studies exist and classification of these is not always easy. The way in which the data is collected is one way to classify the different kinds of descriptive studies. One type of descriptive study, the self-report study, depends on collecting data through questionnaires, interviews, or standardized attitude scales. In another type, the observational study, individuals are not asked for information. Rather, the researcher obtains the desired data through alternative means, such as direct observation (Gay, 1996, p. 251).

There are several major types of self-report research

studies. The most well known and most often used is probably survey research, which generally utilizes questionnaires or interviews to collect data. Surveys can be either sample surveys or census surveys. In the census survey, an attempt is made to acquire data from each and every member of a population. This is usually used when a population is small and readily available (Gay, 1996, p. 215).

This study utilized the Philosophy of Adult Education Inventory (PAEI) and the Principles of Adult Learning Scale (PALS). These two instruments were used to examine the educational philosophies and teaching styles of Construction Management faculty in member universities of the Associated Schools of Construction.

Population

The target population is the group the researcher has an interest in studying. The defined population has at least one characteristic that differentiates it from all other groups. Populations can be any size and may cover any geographic area (Gay, 1996, pp. 112-13).

Sampling is a process of selecting a number of individuals for a study in a way so that the individuals represent the larger group from which they were selected (Gay, 1996, p. 111). The individuals selected make up the

sample for a study, and the larger group is identified as the population. The purpose of sampling is to gain information in order to infer to population. In some cases, a study is conducted that includes the total population of interest (Gay, 1996, p. 111). In a census study such as this, a sample is not used. Instead, information from the entire population is sought. Therefore this study utilized a census survey method in order to describe the 395 full-time faculty of the colleges and universities belonging to the Associated schools of Construction.

The population for this study was the Associated Schools of Construction (ASC). ASC is a national organization of 92 member universities and colleges which grant Construction Management degrees in the United States. The ASC is a professional association for the development and advancement of construction education. It promotes the sharing of ideas and knowledge in curricula, teaching, research and service. The organization publishes The Journal of Construction Education which is a triennial refereed journal.

National and regional schools are represented within the membership of the ASC. There are 228 national universities in the United States of which 147 are public and 81 are private. National universities offer a full

range of undergraduate majors as well as master's and doctoral degrees. Many place strong emphasis on research and receive federal funding for their research endeavors (Smith, 1998, p. 37). Like the national universities, regional universities provide a full range of undergraduate and master's level programs. However, they differ from the national universities in that they offer few, if any, doctoral programs. There are 504 regional universities. Of these, 260 are public and 244 are private. The Carnegie Foundation for the Advancement of Teaching developed these categories (Smith, 1998, p.47). These Construction Management departments have between 1 and 23 full-time faculty.

Philosophy of Adult Education Inventory

The educational philosophies of full-time faculty members within of the Associated Schools of Construction member schools were measured with the Philosophy of Adult Education Inventory. The Philosophy of Adult Education Inventory (PAEI), developed by Lorraine Zinn, was designed to assist adult educators in the identification of their personal philosophies of education and to contrast them with enduring philosophies in the field of Adult Education (Zinn, 1990, p. 59). The inventory includes 15 items which begin with incomplete sentences. These are followed by five

different options that could complete the sentence. Each of the options represent either the Liberal Adult Education, Behaviorist Adult Education, Progressive Adult Education, Humanistic Adult Education, or Radical Adult Education philosophy as described by Elias and Merriam (1995). To the right of each option is a scale from 1 (strongly disagree) to 7 (strongly agree) with a neutral point of 4 (p. 58). Scores are determined by summing the values of the 15 responses for each of the 5 philosophical schools. The highest score reflects the philosophy that is closest to the person's beliefs while the lowest score reflects a philosophy that is least like the person's philosophy (p. 74). There are no right or wrong answers. "The PAEI is designed to be self-administered, self-scored, and self-interpreted" (p.57).

Validity

Validity can simply be defined as the degree to which a test measures what it is supposed to measure (Gay, 1996, p. 138). Tests can be designed for a variety of purposes, and validity can only be evaluated in terms of that purpose. There are several types of validity. The three most important types for instruments used in education are construct, content, and criterion-related validity. Of these, construct validity "is probably the most important

form of validity from a scientific research point of view" (Kerlenger, 1973, p. 457).

Construct validity is the degree to which a test measures an intended hypothetical construct. A construct is a nonobservable trait such as intelligence which explains behavior. One cannot see a construct. One can only observe its effect. In fact, constructs were invented to explain behavior (Gay, 1996, p. 140).

A factor analysis procedure was used to statistically test the construct validity of the PAEI (Zinn, 1983, p. 148). Individual response items showed that a majority "had a moderate to high common factor variance ($>.50$), indicating that they were both valid and reliable measures for the inventory" (p. 150). These data confirmed the finding of a select jury that the PAEI is a valid way to identify a person's adult education philosophy (p. 150).

Content validity is the degree to which a test measures an intended content area. The requirements for content validity include both item validity and sampling validity. Item validity is concerned with whether the test items represent measurement in the intended content area. Sampling validity is concerned with how well the test samples the total content validity. (Gay, 1996, p. 139)

Content validity is determined by expert judgement.

There is no formula by which it can be computed, and there is no way to express it quantitatively. Usually experts in the area covered by the test are asked to assess its content validity. (Gay, 1996, p. 140)

The content validity of the PAEI was established through the testimony of jury experts who were considered knowledgeable in adult education philosophy. The statistical analysis of their responses showed a high content validity for the PAEI through separate item analysis (Zinn, 1983, pp. 145-146). Individual response options confirmed representation of particular philosophies as assigned by Zinn (p. 146).

Criterion-related validity involves comparing the instrument with external variables or criteria (Kirlinger, 1973, p. 459). It includes concurrent and predictive validity. In each case validity is determined by relating performance on a test to performance on another criterion. Criterion-related validity for the PAEI was not documented.

Reliability

Reliability is the degree to which a test consistently measures whatever it claims to measure. As the degree of the reliability increases, confidence also increases that the scores obtained from the administration of the test are essentially the same scores that would be obtained if the

test were re-administered (Gay, 1996, p. 145).

The PAEI is a reliable instrument (Zinn, 1983, p. 151). The reliability was established by the test-retest method. The process used 194 respondents in various areas of adult education, including administrators, teachers, consultants, program coordinators, and graduate students (p. 151).

Principles of Adult Learning Scale

The teaching styles of Construction Management faculty within the Associated Schools of Construction were measured with the Principles of Adult Learning Scale (PALS). This 44-item instrument measures the frequency with which one practices teaching-learning principles that are described in the adult education literature (Conti, 1984, pp. 76-77).

PALS is self-administered and can be completed in about 10 minutes. The survey questions contain several things that a teacher of adults might do in a classroom, and respondents indicate how frequently they practice the action described in each item (Conti, 1998, p. 85). Each of the 44 statements is answered by circling a number from 0 to 5. These numbers correspond as follows: 0--Always, 1--Almost Always, 2--Often, 3--Seldom, 4--Almost Never, 5--Never. "An individual's total score on the instrument is calculated by summing the value of the responses to all items" (Conti, 1990, p. 95). In addition to a total score on the

instrument, the items made up seven factors: Learner-centered Activities, Personalizing Instruction, Relating to Experience, Assessing Student Needs, Climate Building, Participation in the Learning Process, and Flexibility for Personal Development (Conti, 1991, pp. 84-85). "Factor scores are calculated by summing the values of the responses for items in the factor" (p. 95). A high score on PALS indicates a preference for the learner-centered teaching style; conversely, a low score indicates a preference for a teacher-centered style (Conti, 1991, p. 83).

PALS is a valid and reliable 44-item instrument which can be completed rapidly (Conti, 1982, p. 145). The construct validity of the items was established by the testimony of two juries of adult educators. A local jury consisted of three adult education professors from Northern Illinois University who analyzed the items, commented on the validity of the constructs in the items, and suggested improvement for various items (Conti, 1982, p. 139). A national jury composed of 10 adult education professors analyzed the instrument; 78% of these jurors found the concepts of each of the 44 items to be congruent with adult education learning principles supportive of the collaborative mode (p. 141).

The content validity of PALS was established by field-

tests with adult basic education practitioners in full-time public school programs in Illinois in two separate phases. "For PALS content validity was determined by Pearson correlations which measured the relationship between individual items from the instrument and the total score from each participant" (Conti, 1982, p. 140).

Criterion-related validity was established by comparing the scores on PALS, for those who scored two standard deviations either above or below the mean in Phase 2 field testing to their scores on the Flanders Interaction Analysis Categories (FIAC). The FIAC scores were determined through actual classroom observations. FIAC was selected as the external criterion because it is a validated system for measuring and initiating responsive classroom actions and because the actions described in Flander's definition of initiating are highly congruent with the characteristics of the collaborative mode (Conti, 1982, p. 142).

The criterion-related validity was confirmed by comparing the scores on PALS to the Flanders Interaction Analysis Categories (Conti, 1982, p. 140). Pearson correlations between PALS and each of the three possible FIAC ratio scores of teacher response ratio (TRR), teacher question ratio (TQR), and pupil initiation ratio (PIR) showed a positive correlation of .85 (TRR), .79 (TQR), and

.82 (PIR). These high correlations statistically confirmed that PALS consistently measures initiating and responsive constructs and that PALS is capable of consistently differentiating among those who have divergent views concerning these constructs (Conti, 1982, p. 142).

The reliability of PALS as a stable standard for measuring the degree of an adult education practitioner's support for the collaborative mode was established by the test-retest method using the final 44-item form of PALS. This measure of the stability of an examinee's performance on the instrument was conducted after Phase 2 of the field-testing with a group of 23 basic education practitioners in Chicago. The Pearson correlation for the 23 practitioners in the sample group yielded a reliability coefficient of .92 (Conti, 1982, p. 142).

Procedures

The Associated Schools of Construction (ASC) consists of 94 member universities; 92 of these colleges and universities were included in this study. The member universities are found in each region in the United States making this study national in scope. There were 403 full-time faculty members from 92 regional colleges and national universities belonging to ASC included in this descriptive study.

The ASC member schools represent 60% of all universities offering bachelor's and master's degrees in Construction Management in the United States. Each school and is listed on the ASC web page. The web page contains a well organized link to each university as well as a current faculty roster for each school. These individual web links have the names and addresses for each of these faculty members.

Each of the 403 full-time faculty members was mailed a packet. This packet consisted of the PAEI, PALS, an overview sheet, a letter of introduction and a brief demographic data collection sheet, and a self-addressed stamped envelope. Participants were assured of confidentiality. However, the surveys were numbered to allow for tracking. Four weeks after the 403 packets were mailed, 76 had responded, and 8 packets had been returned as undeliverable. Therefore, 19.2% of the total population is represented in this study.

These participants had an average of 13.6 years of workplace experience and 15.4 years of teaching experience. The mean age of the participants is 51.4 years old and they ranged in age from 29 to 67. There were 4 females and 72 males within the study group with 5.5% having bachelors degrees, 43.8% having master's degrees, and 50.7% having

doctorates. Participants completed their highest degree from 1960 through 1999 with the mid 1980's being the mean year of graduation. Responses to the study were received from 49 institutions in 30 states. Respondents were teaching in both regional and national universities; 55.3% were working within national universities and 44.7% were employed in regional institutions. Those receiving teaching awards included 51.3% of the respondents.

Therefore, 19.25% of the total population is represented in this study. "In general, the minimum number of subjects believed to be acceptable for a study depends upon the type of research involved. For descriptive research, a sample of 10% of the population is considered minimum. For smaller populations, 20% may be required" (Gay, 1992, p. 137). Thus, the number of participants in this study satisfied the minimum number required for a descriptive study.

Those responding to this study were judged to be representative of the total population because the participants were found to be the essentially the same as the total population. Several factors were known about the participants prior to the mailing of packets. These factors were level of credentials, type and location of university, and gender. The 19.2% who responded to the study were like

the total population for these three factors. There was no differences found between respondents and non-respondents.

CHAPTER 4

FINDINGS

This descriptive study examined the adult education philosophies and teaching styles of full-time faculty teaching within universities and colleges belonging to the Associated Schools of Construction. The adult education philosophy as measured by the Philosophy of Adult Education Inventory and teaching style was measured by the Principles of Adult Learning Scale were determined for the study group. Then the variables of teaching style and educational philosophy were examined in relationship to the variables of age, gender, and faculty credentials. Finally, the interaction between philosophical beliefs and teaching style was investigated.

Educational Philosophies

The Philosophy of Adult Education Inventory (PAEI) is an instrument which classifies respondents into five philosophical schools of thought. Those five philosophical orientations are Liberal, Progressive, Behaviorist, Humanist, and Radical. The PAEI was used to examine the adult education philosophies of Construction Management

faculty.

In order to score the PAEI, a score is calculated for each of the five philosophical classifications. The respondent's highest score of the five indicates the philosophy nearest to the respondent's beliefs, and their lowest score indicates which philosophical orientation is the least preferred by the respondent. A score of 95 to 105 as being an indicative of a strong preference for a philosophy, a score of 15-25 indicates a strong disagreement with a given philosophy; scores is 55 and 65, indicates neither strong agreement nor disagreement with a particular philosophy (Zinn, 1991, pp. 74-75).

The raw scores from the PAEI for the 76 participants in the study indicated that their strongest support was for the Progressive and Behaviorist orientations. The means for the various philosophies were as follows: Progressive--77.9, Behaviorist--75.8, Liberal Education--72.1, Humanist--64.4, and Radical--57.9.

The scores for the PAEI are not standardized. Therefore a person's score for their most preferred philosophy may vary greatly from that of another person even though they have similar beliefs. In order to more effectively compare scores from all individuals within the study, scores were converted into percentages. These

percentages enabled a quantitative comparison to be made between all participants within the study. To compute this quantitative data, a total score was computed for each participant in the study. These scores were derived by adding individual scores for each of the five philosophical areas. The score for each philosophical school was then divided into the total score to produce a new score which is a percentage of the total score. Because these standardized scores were a percent of support a person gave to each of the five philosophical schools, scores could range from 0 to 100. These percentages allowed for an equitable comparison between individuals within the study.

Using these standardized scores, 39.5% of the group scored highest in the progressive school. The behaviorist philosophical orientation was the second most represented with 25% of the group preferring this school. If these two philosophical orientations are combined, 64.5% or nearly two-thirds of the participants favored these two philosophies.

In the remaining third of the responding group, some participants had equal scores for more than one philosophical school. Those participants with a mixed philosophical orientation included 18.4% of the study group. Of the 14 in this group, 2 had equal scores for each

philosophical school. Another had equal scores for the progressive, humanistic, and liberal education orientations. Of the remaining 11, all but 2 had a high Progressive score which was tied with that of another philosophical school. The nine with their highest score in the progressive orientation had equivalent scores in the following orientations: Liberal--4, Behaviorist--3, and Humanistic--2. The two other participants had equivalent scores in the behaviorist and humanistic orientations. Thus, for all but two of those with equivalent high scores, one of the scores was in the progressive orientation. While the other orientations except for the radical orientation each had seven representatives, the trend in this group was for the members to have a high progressive orientation which was matched by an equivalent score in another orientation.

Most participants supported either the progressive or behaviorist orientation. Only 9.4% had a liberal orientation, and 7.9% had a humanistic orientation. The radical philosophical orientation was not the highest preferred philosophy by anyone within the study group.

Teaching Style

PALS

The teaching style of Construction Management faculty was measured with the Principles of Adult Learning Scale

(PALS). Scores on PALS may range from 0 to 220. The average score for PALS is 146 with a standard deviation of 20. Scores above 146 indicate a tendency toward the learner-centered mode while lower scores imply support of the teacher-centered approach (Conti, 1991, p. 83).

Scores can be interpreted by relating them to the average score for the instrument. The overall teaching style and strength of the commitment to that style can be judged by comparing scores to 146. Most scores will be within one standard deviation of the mean; these scores will be found between 126 and 166. Movement toward these scores indicates an increased commitment to a specific teaching style (Conti, 1991, P. 83).

Scores that are in the second standard deviation of 20 to 40 points different from the mean indicate a very strong and consistent support of a definitive teaching style. Scores that are in the third standard deviation and are at least 40 points from the mean indicate an extreme commitment to a style. A total score can indicate the overall teaching style and the strength of the teacher's support for that particular style. The score can provide a general label for defining teaching style (Conti, 1991, p. 83).

Those within the Construction Management faculty study group have a mean score of 124.7 which is 21.3 points below

the established mean for PALS. This is indicative of a very strong teacher-centered mode of instruction. Only 8% of the study group had scores of 146 or above with the highest score being 155; those in this 8% have a more learner-centered approach to teaching. For those below the mean, 31% of the study group had scores between 126 and 146, which were within the first standard deviation established for PALS. The remaining 60% had scores which were greater than one standard deviation below the mean.

Teaching style scores and educational philosophy orientation scores were available for each participant. The following cross tabulation displays the distribution of the 76 participants in the study across the various possible groupings for these two scales. The philosophical orientation consists of those who had their highest PAEI score in that orientation. The teaching style scores are group by one-half standard deviations of PALS.

	Lib.	Beh.	Prog.	Hum.	Mixed
Below 107	2	1	4	0	2
107-126	5	13	12	2	5
127-146	0	4	11	3	6
147-166	0	1	2	0	1
167-186	0	0	1	1	0

PALS Factors

While the total PALS score describes a person's general teaching style, the overall PALS score can be divided into seven factors. Each of these factors contains a similar group of items that form a major component of teaching style. The support of the collaborate mode in the adult education literature is reflected in the names for the factor titles. High scores in each of these factors indicate support of the learner-centered concept implied by the factor name. Low scores indicate support of the opposite concept. These factor scores are calculated by adding up the points for each item in the factor (Conti, 1991, p. 84).

The main factor for PALS is Learner-Centered Activities with 12 negative instrument items. These items relate to evaluation by formal tests and to a comparison of students to external standards. A low score on Factor 1 indicates a teacher-centered style. A high score indicated a learner-centered approach to teaching style (Conti, 1991, p. 84).

The respondents to the study had a mean of 39.14 for Factor 1. The established mean for Factor 1 is 38. Therefore, Construction Management faculty within the study group fall into two nearly equal categories near the mean with 54% falling below the established mean indicating a

teacher-centered approach to teaching and 46% being above the established mean indicating a learner-centered approach.

Factor 2 in PALS is Personalizing Instruction with six positive items and three negative items. A high score on Factor 2 indicates that the teacher does a variety of things to personalize instruction for students. Instruction is self-paced and methods are dictated by the learner. A low score indicates a teacher-centered style (Conti, 1991, p. 84).

Construction Management faculty had a mean score of 19.38 which falls well below the established mean of 31 for this factor. In fact, 96% of the respondent scores were below the established mean indicating a propensity for a very teacher-centered style. Less than 4% of the respondents scored at or above the established mean for this factor. Therefore very few respondents practice a learner-centered style or consider personalizing instruction.

Factor 3 is Relating to Experience and consists of six positive items. A high score on this factor indicates the teacher plans learning activities which take into account the student's previous experiences with learning organized according to the problems that the students might encounter in everyday learning (Conti, 1991, p. 84).

The respondents' mean score on Factor 3 was 17.4. This

is below the established mean of 21 for this factor. Those scoring less than or equal to the established mean of 21 include 78% of the study group. This would indicate the majority of Construction Management faculty within the study group do not use the learner's prior experiences as a basis for their learning. There were 22% of the respondents with scores at or above the established mean for this factor indicating these teachers recognize the learners previous experiences.

Factor 4 is Assessing Student Needs and is made up of four positive items related to assessing student needs. High scores indicate a preference for treating students as adults and finding out what each student wants and needs to know (Conti, 1991, p. 85).

The mean score for Factor 4 for the Construction Management faculty within the study was 13. This is slightly below the established mean of 14. This places 34% of the study group above the established mean; these faculty treat students more like adults by including such things as participating in individual conferences and informal counseling. The 66% who were below the mean of 14 have less reliance on individual conferences and informal counseling.

Factor 5 is Climate Building and contains four positive items. A high score indicates that a friendly and informal

setting is a first step in the learning process. Feedback from students is sought, discussions are encouraged, and problem solving and experimentation are included (Conti, 1991, p. 85).

For Factor 5, the study respondents had a mean score of 14.4. This is below the established mean of 16. For 79% of the study group, this indicates that respondents have more rigid classroom environments, more formal instruction, less dialogue with students, and less experimentation. The 21% of the professors who were above the mean tend to favor a friendly and informal setting, encourage risk taking, and eliminate barriers to learning.

Factor 6 is Participation in the Learning Process and has four positive items. A high score indicates that students are involved in evaluating their own performance levels and determining the types of materials and topics used within the educational setting (Conti, 1991, p. 65).

The Construction Management faculty group had a mean score of 8.8 on Factor 6. The established mean for this factor is 13. Thus, 86% of the study group would likely not encourage student involvement in determining the nature and evaluation of course material. Students would likely not be allowed to identify problems that they wish to solve. There were 14% of the professors who have a preference for

allowing students to identify the problems that wish to solve. These teachers encourage adult to adult relationships.

Factor 7 is Flexibility for Personal Development and has five negative items. A low score indicates a rigid teacher-centered style where the instructor is viewed as a knowledge provider who sets the objectives early in the program with a disciplined learning environment where little or no flexibility is offered and controversial discussion topics are discouraged. Those with views opposite or contrary to these show a preference for a learner-centered atmosphere and score high on this factor.

The Construction Management group had a mean score of 12.2 for Factor 7. This is slightly below the established mean of 13 for this factor. There were 68% of the Construction Management faculty below the established mean, indicating these faculty have a teacher-centered style. These professors tend to oppose the collaborative mode and view themselves as providers of knowledge rather than facilitators. The other 32% of the professors have a greater tendency to view personal fulfillment as a central aim of education. They maintain a flexible classroom environment and flexible curriculum.

Relationship of Philosophy to Demographic Variables

Demographic and professional data related to the variables of age, gender, and faculty credentials were collected for each of the 76 Construction Management faculty within the study group. This data included date of graduation for last degree, years of teaching experience, years of workplace experience, teaching awards received, and type of university at which the faculty member was currently employed.

The relationship between these variables and educational philosophy was examined utilizing a one-way analysis of variance (ANOVA). A one-way analysis of variance is an inferential statistical procedure which has the general purpose of comparing groups in terms of the mean scores (Huck, Cormier, & Bounds, 1974, p. 58).

The use of the one-way analysis of variance presupposes that the data have been collected in one of three ways. One assumption is that there is one independent variable with two or more levels and that the levels of the independent variable exhaust the possible levels of interest to the researcher. Another is that the levels of the independent variable differed either qualitatively or quantitatively. Lastly, a subject may appear in one and only one group (level of independent variable), and the subject represents

a random sample from a population (Shavelson, 1996, p. 377).

Age

Participants were asked to provide their age. All reported this information. Three age groups were formed: 29-48, 49-54 and 55 and over. Each of these groups represent approximately one-third of the respondents.

The participants were grouped by age and compared on each philosophical scale (see Table 1). No difference were found on the Liberal, Progressive, Humanist, and Radical scores. However, a significant difference was found on the Behavior philosophy. A Tukey procedure indicated the difference was between those 55 and over who formed one group and those 54 and under who formed another group.

Those 55 and over had a mean standardized score of 22.87 on the Behavior Philosophy score. For those under 55, those 29 to 48 had a mean standardized score of 21.24, and those 49 to 54 had a mean standardized score of 21.16. Thus, those in the 54 and over age group favored the Behavioral philosophy over all other philosophical points of view including the Liberal, Progressive, Humanist, and Radical philosophies.

These scores indicate that the 55 and over group are likely to favor the Behaviorist approach where the teacher's role as the manager or controller. The teacher predicts and

directs the learning outcomes. This approach favors the use of programmed instruction utilizing contract learning, teaching machines, computer assisted instruction, practice and reinforcement (Zinn, 1990, p. 76).

Table 1. ANOVA of PAEI by Age

Variable	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Behaviorist					
Between	2	49.09	24.54	5.43	.01
Within	73	335.76	4.60		
Radical					
Between	2	40.52	20.26	2.73	.10
Within	73	623.26	8.54		
Humanist					
Between	2	34.82	17.41	2.23	.11
Within	73	569.32	7.80		
Progressive					
Between	2	8.73	4.36	1.55	.23
Within	73	206.07	2.80		
Liberal					
Between	2	9.92	4.96	.83	.44
Within	73	431.84	5.92		

Graduation Date

The study group was divided by graduation date for which they received their highest level of formal education. The respondents were grouped according to those who had graduated in 1976 and before, those graduating between 1977 and 1988 and those who graduated after 1988. Each of these groups represent approximately one-third of the respondents.

The participants were grouped by graduation date and compared on each philosophical scale. There were 26

professors who graduated in 1976 or before, 24 professors who graduated between 1977 and 1988, and 26 who graduated after 1988. No significant differences were found in the Liberal, Radical, and Progressive philosophies between these two groups. Significant differences were evident in the Behavior and Humanist philosophies (see Table 2).

Those that graduated in 1976 or before had a mean standardized score of 22.56 on the Behaviorist philosophy was significantly different than the 21.90 for those who graduated between 1977 and 1988 and the 21 for those graduating after 1988. Thus, those who graduated in 1976 or before had a stronger preference for the Behaviorist philosophy than those who graduated after 1988 and for those graduating between 1977 and 1988.

On the scale for the Humanist philosophy, those graduating after 1988 had a mean standardized score of 19.52. This was significantly different from the score of 17.46 for those who had graduated in 1976 or before and the score of 18.47 for those graduating between 1977 and 1988.

Those who graduated in 1976 or before aligned themselves with the Behaviorist philosophy while those professors who graduated after 1988 show greater support for the Humanist philosophical point of view. Thus, professors who graduated before 1976 show a higher preference for

Table 2. ANOVA of PAEI by Graduation Date

Variable	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Humanist					
Between	2	55.16	27.58	3.66	.03
Within	73	548.98	7.52		
Behaviorist					
Between	2	31.69	15.84	3.27	.04
Within	73	353.16	4.83		
Progressive					
Between	2	12.43	6.21	2.24	.11
Within	73	202.37	2.77		
Radical					
Between	2	17.33	8.66	.98	.38
Within	73	646.44	8.85		
Liberal					
Between	2	3.92	1.96	.33	.72
Within	73	437.83	6.00		

stimulus-response and behavior modification techniques while professors who graduated after 1988 prefer experiential learning, freedom, individuality, and self-directedness.

Other Demographic Variables

The variables of teaching experience, teaching awards received, and work experience were also examined. Work experience was grouped into four levels by years of experience: 1 to 5 years, 6 to 10, 11 to 20, and 21 and higher. Approximately one-fourth of respondents were within each age grouping no significant difference was found for work experience (see Table 3). Teaching experience was also grouped into four identical levels, and no significant difference was found (see Table 3).

The respondents were also grouped according to the type of university at which they currently worked. The two classifications were either national or regional universities. No significant difference was found between regional and national universities (see Table 3). The data were also collected concerning teaching awards. The respondents were grouped between those who had received a teaching award and those who had not. No significance difference were found between the group (see Table 3).

Regression Analysis

One-way analysis of variance examines one variable at a time. "Since a combination of variables usually results in a more accurate prediction than one variable" (Gay, 1992, p. 442), regression analyses were also calculated for each of the philosophical orientation scales and the various demographic variables. "Multiple regression is "a multivariate technique for determining the correlation between a criterion variable and some combination of two or more predictor variables" (Borg & Gall, 1983, p. 596).

Five separate regression analyses were conducted. Each used one of the five philosophical orientations as the dependent variable and used the demographic variables of age, education, teaching experience, work experience, date of graduation, type of institution, and receiving of a

teaching award as the predictor variables. None of the analyzes produced any useful equations. For the liberal education, progressive, and radical philosophical orientations, no demographic variables were entered into the equation. The equation produced for the behaviorist orientation contained only the variable of age and accounted for a only 7.8% of the variance in the relationship. The equation produced for the humanist orientation contained only the variable of graduation and accounted for only 8.5% of the variance in the relationship. Thus, regression analyzes were not useful for describing the relationship between the various demographic variables and philosophical orientations.

Relationship of Teaching Style to Demographic Variable

The Principles of Adult Learning Scale was used to measure teaching styles of the Construction Management professors in the study group. Several demographic factors were collected from the participants, and this data and its relationship to PALS was examined through the use of an ANOVA. The same groupings were used for each of variables as were used for the analysis with the Philosophies of Adult Education Inventory.

Age

Respondents were grouped into three age groups: 29-48,

Table 3. ANOVA of PAEI by Work Experience, Teaching Experience, Type of University, and Teaching Award

Variable	df	SS	MS	F	p
<u>Work Experience</u>					
Behaviorist					
Between	3	31.24	10.41	2.11	.11
Within	72	349.78	4.92		
Humanist					
Between	3	35.81	11.94	1.58	.20
Within	72	537.39	7.57		
Liberal					
Between	3	18.37	6.12	1.09	.36
Within	72	399.72	5.63		
Radical					
Between	3	15.33	5.11	.56	.64
Within	72	645.52	9.09		
Progressive					
Between	3	.63	.21	.07	.97
Within	72	213.96	3.01		
<u>Teaching Experience</u>					
Radical					
Between	3	47.29	15.76	1.84	.15
Within	72	616.48	8.56		
Behaviorist					
Between	3	20.36	6.79	1.34	.27
Within	72	364.49	5.06		
Liberal					
Between	3	19.28	6.42	1.09	.36
Within	72	422.47	5.86		
Humanist					
Between	3	13.96	4.65	.57	.64
Within	72	590.18	8.19		
Progressive					
Between	3	2.27	.76	.26	.86
Within	72	212.52	2.95		
<u>Type of University</u>					
Liberal					
Between	1	18.37	18.37	3.21	.08
Within	74	423.39	5.72		
Behaviorist					
Between	1	8.18	8.18	1.61	.21
Within	74	376.67	5.09		
Radical					
Between	1	9.42	9.42	1.06	.30
Within	74	654.35	8.8		
Humanist					

	Between	1	8.43	8.43	1.05	.31
	Within	74	595.71	8.05		
Progressive	Between	1	1.37	1.37	.48	.49
	Within	74	213.42	2.88		
<u>Teaching Award</u>						
Liberal	Between	1	11.71	11.71	2.01	.16
	Within	74	430.05	5.8		
Humanist	Between	1	3.34	3.34	.41	.52
	Within	74	600.8	8.12		
Radical	Between	1	.97	.97	.11	.74
	Within	74	662.80	8.96		
Behaviorist	Between	1	.44	.44	.08	.77
	Within	74	384.40	5.19		
Progressive	Between	1	.01	.01	.01	.97
	Within	74	214.8	2.9		
<u>Education Level</u>						
Liberal	Between	1	14.14	14.14	2.44	.12
	Within	74	427.62	5.78		
Humanist	Between	1	16.77	16.77	2.11	.15
	Within	74	587.37	7.93		
Behaviorist	Between	1	1.61	1.61	.31	.58
	Within	74	383.23	5.17		
Radical	Between	1	2.49	2.49	.28	.60
	Within	74	661.28	8.94		
Progressive	Between	1	.41	.41	.41	.71
	Within	74	214.39	2.8		

49-54, and 55 and over. Eight separate analysis were conducted for the PALS total score and each of the seven factors. A significant difference was found on Factor 4- Assessing Student Needs (see Table 4). No significant difference was found for the other factors. For Factor--4,

Table 4. ANOVA of PALS by Age

Variable	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Assessing					
Student Needs					
Between	2	97.224	8.61	3.81	.02
Within	73	930.76	12.75		
Climate					
building					
Between	2	14.32	7.16	.94	.39
Within	73	555.16	7.60		
PALS					
Between	2	175.20	87.60	.29	.75
Within	73	22258.9	309.92		
Flexibility					
For Personal					
Development					
Between	2	7.81	3.90	.23	.79
Within	73	1239.78	16.98		
Personalizing					
Instruction					
Between	2	9.91	4.95	.14	.86
Within	73	2492.16	34.14		
Participation					
In The					
Learning					
Process					
Between	2	2.93	1.50	.12	.88
Within	73	862.92	11.82		
Learner-					
Centered					
Activities					
Between	2	6.23	3.11	.08	.93
Within	73	2968.68	40.67		
Relating To					
Experience					
Between	2	2.02	1.01	.04	.96
Within	73	1655.01	22.67		

Assessing Student Needs, those in the oldest group scored the highest. Those who were 55 and over had a mean score of 14.18. (see Table 4) Those professors 29 to 48 had a mean score of 11.44, and those 49 to 54 had mean score of 13.3.

Assessing the needs of students includes the activities of informal counseling, goal setting for both short and long range objectives, and treating the student as an adult. Those in the 55 and over group scored at the mean of 14 for this factor while those below the age 55 tended not to support activities related to assessing student needs.

Teaching Experience

Participants had between 1 and 35 years of teaching experience. They were divided into four groups by years of teaching experience: 1-5, 6-10, 11-20, and 21 and more. No differences were found on the overall PALS score and most of the factors (see Table 5). However, significant difference was found for Factor 3--Relating to Experience. The post hoc analysis using the Tukey procedure indicated that the differences were between those with 11-20 years experience and the other groups. Those with 11-20 years of teaching experience had a mean of 19.11 while the other three groups had means of 18.14 for those with 1-5 years of experience, 17.75 for those with 6-10 years of experience, and 15.22 for those with over 20 years of experience.

Relating to Experience involves planning learning activities that include problems which might be encountered in everyday living. The mean score for this factor is 21. While both groups were below this mean, those who have 11-20

years of teaching experience are more likely than others to encourage learners to use their prior experiences as a basis for learning. While they are below the norm on this factor, those with 11-20 years of experience are more likely than the others to encourage learners to ponder independence.

Table 5. ANOVA of PALS by Teaching Experience

Variable	df	SS	MS	F	p
Relating To Experience					
Between	3	187.36	62.45	3.06	.03
Within	72	1469.67	20.41		
Flexibility For Personal Development					
Between	3	109.88	36.62	2.32	.08
Within	72	1137.71	15.8		
Participation In The Learning Process					
Between	3	48.75	16.25	1.43	.24
Within	72	817.1	11.35		
Learner-Centered Activities					
Between	3	157.13	52.38	1.34	.27
Within	72	2817.77	39.13		
PALS					
Between	3	683.98	227.99	.76	.52
Within	72	21750.19	302.09		
Climate Building					
Between	3	8.86	2.95	.38	.77
Within	72	560.62	7.79		
Personalizing Instruction					
Between	3	1.56	.52	.01	.99
Within	72	2500.50	34.73		
Assessing Student Needs					
Between	3	1.81	.60	.04	.99
Within	72	1026.17	14.25		

Work Experience

The participants were divided into four groups according to their years of work experience: 1-5, 6-10, 11-20, and 21 and over. The ANOVA between teaching style measured with the Principles of Adult Learning Scale and work experience found no difference due to overall PALS score for most of the factors. However a significant difference existed for Factor 4--Assessing Student Needs and for Factor 7--Flexibility for Personal Development (see Table 6).

Those with 21 or more years of work experience had a mean of 15.5 for Factor 4--Assessing Student Needs. This score is .42 standard deviations above the mean of 14 for this factor. The other groups had means of 11.00 for those with 1-5 years of work experience, 12.67 for those with 6-10 years, and 12.78 for those with 11-20 years of experience. Thus, extensive work experience is related to greater support for assessing the needs of Construction Management students.

Those with 11-20 years of work experience had a mean score of 14 for Factor 7--Flexibility for Personal Development. This score is .26 standard deviations above the mean of 13 for this factor. The other groups had means of 10.69 for those with 6-10 years of experience, 11.7 for

those with 1-5 years experience, and 12.5 for those with 21 or more years of experience. Those scoring high on this factor are considered to be facilitators of knowledge rather than just providers of knowledge following a rigid structure even when student's needs are changing (Conti, 1991, p. 65).

Table 6. ANOVA of PALS by Work Experience

Variable	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Assessing					
Student Needs					
Between	3	136.77	45.59	3.64	.01
Within	71	890.08	12.54		
Flexibility for					
Personal					
Development					
Between	3	125.28	41.76	2.64	.05
Within	71	1122.27	15.81		
Participation In					
The Learning					
Process					
Between	3	69.57	23.19	2.13	.10
Within	71	772.28	10.88		
PALS					
Between	3	1360.82	453.61	1.54	.21
Within	71	20940.09	294.93		
Relating To					
Experience					
Between	3	97.61	32.53	1.48	.23
Within	71	1559.23	21.96		
Learner-Centered					
Activities					
Between	3	59.57	19.86	.49	.69
Within	71	2900.27	40.85		
Climate Building					
Between	3	7.37	2.46	.32	.81
Within	71	550.11	7.75		
Personalizing					
Instruction					
Between	3	8.75	2.91	.08	.97
within	71	2464.04	34.7		

Thus, those professors with 11-20 years of work experience are more facilitative in their approach to teaching.

Graduation Date

The date Construction Management professors received their highest degree was collected. That graduation date of the participants and the relationship to teaching style was examined utilizing an ANOVA. The professors were divided into three groups: those graduating in 1976 or before, and those graduating between 1977 and 1988, and those graduating after 1988. No significant differences were found between graduation date and the overall Principle of Adult Learning Scale scores and four of its factors (see Table 7). However a significant differences were found on Factor 6 -- Participation in the Learning Process, Factor 7--Flexibility for Personal Development, and Factor 4--Assessing Student Needs (see Table 7).

The Tukey proceddure indicated that those with the latest graduation date scored higher on Factor-6 Participation in the Learning Process than the other two groups. Those who had graduated after 1988 had a mean of 10.19. These professors would likely allow students to identify problems they wish to solve. Those who graduated before 1977 had a mean of 8.27 and those graduating between

1977 and 1988 had a mean of 7.93.

The Tukey procedure showed that those with the latest graduation date scored higher on Factor 7--Flexibility for Personal Development than the other groups. The mean score for this factor was 13.81 while those graduating between

Table 7. ANOVA of PALS by Graduation Date

Variable	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Participation in the Learning Process					
Between	2	75.54	37.77	3.84	.03
Within	73	790.31	10.82		
Flexibility For Personal Development					
Between	2	109.06	54.53	3.49	.03
Within	73	1138.53	15.60		
Assessing Student Needs					
Between	2	85.74	42.87	3.32	.04
Within	73	942.24	12.91		
PALS					
Between	2	1562.16	781.07	2.73	.07
Within	73	20872.01	285.92		
Personalizing Instruction					
Between	2	153.53	76.76	2.24	.09
Within	73	2348.53	32.17		
Relating To Experience					
Between	2	59.62	29.81	1.36	.26
Within	73	1597.40	21.88		
Learner-Centered Activities					
Between	2	97.33	48.66	1.23	.30
Within	73	2877.57	39.42		
Climate Building					
Between	2	1.58	.79	.10	.91
Within	73	567.90	7.78		

1977 to 1988 had a mean of 11.77 and those graduating before 1977 had a mean of 11. The Tukey procedure revealed that those graduating before 1977 scored higher than those other two groups on Factor 4--Assessing Student Needs with a mean score of 14.37. Those graduating between 1977 and 1988 had a mean score of 11.75 and those graduating after 1988 had a mean score of 12.96.

University Type

The professors in the study were teaching within national as well as regional universities. There were 42 professor teaching within national universities while 34 of the participants were teaching within regional universities. An ANOVA was used to determine if a relationship existed between university type and teaching style. Two factors were found to be significant when university type is considered (see Table 8). Those professors teaching in national universities had a mean PALS score of 128.80 while those teaching in regional institutions had a mean score 119.12. Those at national universities had a mean of 20.9 for Factor 2--Personalizing Instruction while those professors in regional institutions who had a mean of 17.47. No differences were found on the other factors (see Table 8).

Although the overall mean score on PALS was higher for

those working in national institutions than those in regional institutions their mean score of 128.8 was nearly one standard deviation from the overall mean for PALS of 146. Those scoring less than 146 are generally considered teacher-centered. Therefore, those working in national

Table 8. ANOVA of PALS by University Type

Variable	df	SS	MS	F	p
PALS					
Between	1	1760.60	1760.60	6.3	.01
Within	74	20673.56	279.37		
Personalizing Instruction					
Between	1	223.13	223.13	7.24	.01
Within	74	2278.93	30.80		
Participation In The Learning Process					
Between	1	40.13	40.13	3.60	.06
Within	74	825.72	11.16		
Relating To Experience					
Between	1	74.1	74.10	3.46	.07
Within	74	1582.91	21.39		
Flexibility For Personal Development					
Between	1	14.37	14.37	.86	.36
Within	74	1233.21	16.66		
Assessing Student Needs					
Between	1	9.01	9.01	.65	.42
Within	74	1018.97	13.77		
Learner-Centered Activities					
Between	1	15.24	15.23	.38	.53
Within	74	2959.67	39.99		
Climate Building					
Between	1	1.9	1.9	.25	.62
Within	74	567.58	7.67		

universities might be considered less teacher-centered than those professors working in regional universities.

The national university professors had a higher mean score than the regional university professors for Factor 2-- Personalizing Instruction. However, like the overall PALS score, both groups scored far below the mean of 31 for this factor. The national university group was 1.49 standard deviation below the mean while the regional group was 1.99 standard deviations below the mean. Thus, both groups tend to reject activities to meet the unique needs of each student. This includes using various methods, materials, and assignments to meet individual abilities and needs. Those at the regional institutions are stronger in their efforts to personalize instruction for the individual student.

Education Level and Teaching Awards

The level of education was collected for all participants, and each participant was asked if they had received any teaching awards. An ANOVA was performed to examine the relationship between educational level and teaching style. Of the study group, 50.3% had doctorates, 43.4% had masters degrees, and 5.3% had bachelors degrees. No significant relationship was found between education level and the Principles of Adult Learning Scale and any of

its factors (see Table 9). Likewise, no significant relationship was found between receiving a teaching award and the Principle of Adult Learning Scale and any its factors (see Table 9).

Regression Analysis

As with the philosophical orientations, a regression analysis was conducted with the demographic variables to determine their relationship with the participants' teaching style. In this regression analysis, the total PALS score was used as the dependent variable and the demographic variables of age, education, teaching experience, work experience, date of graduation, type of institution, and receiving of a teaching award functioned as the predictor variables.

This regression analysis failed to produce a useful equation. The equation, which contained the variables of type of institution and work experience, accounted for only 11.6% of the variance in the relationship. Therefore, it was judged as not being useful for describing the relationship between teaching style and the various demographic variables collected from the respondents.

Discriminant Analysis

Discriminant analysis is a procedure which allows for investigating of the differences between two groups in relationship to several variables simultaneously (Klecka,

Table 9. ANOVA of PALS by Education Level & Teaching Awards

Variable	df	SS	MS	F	p
<u>Education Level</u>					
Assessing Student Needs					
Between	1	35.08	35.08	2.61	.11
Within	74	992.90	13.42		
Learner-Centered Activities					
Between	1	40.87	40.87	1.03	.31
Within	74	2934.04	39.65		
Participation In The Learning Process					
Between	1	3.02	3.02	.26	.61
Within	74	862.83	11.66		
Personalizing Instruction					
Between	1	3.69	3.69	.11	.74
Within	74	2498.37	33.76		
Climate Building					
Between	1	.28	.28	.04	.85
Within	74	569.20	7.69		
PALS					
Between	1	2.79	2.79	.01	.92
Within	74	22431.37	303.13		
Relating To Experience					
Between	1	.13	.13	.01	.94
Within	74	1656.89	22.39		
Flexibility For Personal Development					
Between	1	.01	.01	.01	.97
Within	74	1247.57	16.86		
<u>Awards Received</u>					
Participation In The Learning Process					
Between	1	8.32	8.32	.72	.40
Within	74	857.53	11.59		
Assessing Student Needs					
Between	1	6.02	6.02	.43	.51
Within	74	1021.96	13.81		
Flexibility For					

Personal Development					
Between	1	6.43	6.43	.38	.54
Within	74	1241.16	16.77		
PALS					
Between	1	67.44	67.44	.22	.64
Within	74	22366.73	302.25		
Relating To Experience					
Between	1	4.83	4.83	.22	.64
Within	74	1652.19	22.32		
Learner-Centered Activities					
Between	1	4.13	4.13	.10	.75
Within	74	2970.78	40.14		
Climate Building					
Between	1	.41	.41	.05	.81
Within	74	569.07	7.69		
Personalizing Instruction					
Between	1	1.52	1.52	.04	.83
Within	74	2500.54	33.79		

1980, p. 7). Here, the emphasis is upon analyzing the variables together rather than one at a time as in one-way analysis of variance.

Discriminant analysis is concerned with the grouping of people and with analyzing the interrelationship of multiple variables to determine if they can explain a person's placement in a specific group. Unlike univariate analysis which examine individual variables separately and allow them to be disassociated from the total person who is a synergistic composition of these various variables, discriminant analysis examines people on a set of variables to determine if any of them interact in a combination that can explain the person's placement in the group. (Conti, 1993, p. 91)

Discriminant analysis can be used either to describe the way groups differ or to predict membership in a group.

In this study, this statistical technique was used to investigate if educational philosophies could be used to identify the ways groups of faculty at Associated Schools of Construction member universities differed in teaching styles.

Two criteria were used for judging if it was possible to discriminate between those in the teaching style groups using the discriminating variables related to educational philosophy. The first criterion was that the discriminant function produced by the analysis had to be describable using the structure coefficients with a value of .3 or greater (Conti, 1993, p.93). The second criterion was that the discriminant function had to correctly classify at least two-thirds of the cases for each group.

Since discriminant analysis produces a discriminant function regardless of the meaning or the statistical significance of the function, established criteria are needed for determining if the function can be "judged as good and useful" (p.93). Therefore, first criterion examined the structure matrix produced in the analysis. This matrix shows the correlation between the individual discriminating variables and overall discriminant function (Klecka, 1990. p. 31). If several of the variables do not have a coefficient of at least .3, it is impossible to

discern the meaning of the function. Thus, this criterion requires that the discriminant function must have clarify in order to be judged good and useful.

The second criterion requires the discriminant function to account for a significant amount of variance before it can be judged good and useful. "The percentage of cases classified correctly is often taken as an index of the effectiveness of the discriminant function. When evaluating this measure it is important to compare the observed misclassification rate to that expected by chance alone" (Norusis, 1988, p. B-13). Chance is the probability of the person randomly being placed in the group. It is expressed in percentages when referring to the classification rate for discriminant function. The criterion used in this study was that it had to correctly classify two-thirds of those in the group before it would be judged good and useful.

Thus, these two criteria require that the results of a discriminant analysis be good and useful before being used to describe the differences in the groups. Together these two criteria requires that the function be both descriptive and highly accurate in order to be used.

Discriminant analysis was used to describe the combination of educational philosophy variables that could be used to distinguish the professors of Construction

Management when they were grouped according to teaching style. For purposes of analysis, the 76 professors were placed in two groups. One group contained the 46 professors who scored 126 and below on the Principles of Adult Learning Scale (PALS). The other group was made up of the 30 professors who scored above 126 on PALS.

The set of discriminating variables used to predict placement in these groups consisted of the standardized educational philosophy scores for each professor. Since the scoring for the original Philosophy of Adult Education Inventory scores does not provide for a standardized scoring format, the scores for each educational philosophy were converted to a percentage of the total PAEI score for each individual. The five separate variables in this set were the educational philosophies of Liberal Education, Behaviorism, Progressivism, Humanism, and Radical Adult Education.

The pooled within-groups correlations are the correlations for the variables with the respondents placed in their groups of either above or below the mean score for PALS. The pooled within-groups correlation matrix of discriminating variables was showed the interdependencies among variables. Variables should not be sharing variance. The within-groups matrix reveals how the discriminant

function is related to the variables within each group in the analysis. The 10 coefficients in this analysis were as follows: below .2--1, .2 to .3--2, .3 to .4--0, .4 to .6--1, .6 to .7--2, and over .7--3. Thus, some of the variables shared variance, and the results of the analysis should be interpreted with this in mind.

Stepwise selection was used to determine which variables added most to the discrimination between teaching style groupings. This stepwise procedure with Wilks's lambda is commonly used in discriminant analysis studies in education. As a result of this stepwise procedure, three variables were included in the discriminant function. The following discriminating variables and their corresponding Wilks's lambda were selected: Liberal--.77, Humanism--.76, and Radical Adult Education--.75. The other two educational philosophies did not account for enough variance to be included in the discriminant function.

Standardized discriminant function coefficients indicate used to determine which variables contribute most to the discrimination between the groups. The standardized coefficients show the relative importance of each variable to the overall discriminant function. The standardized coefficients for this function which discriminated the group of professors above a score of 126 on PALS from those below

that score on PALS were as follows: Liberal Education--.88, Humanistic--(-.39), and Radical Adult Education--.35 Thus, Liberal Adult Education is highly correlated to the overall discriminant function. Humanistic and Radical educational philosophies each contribute about one-half as much as Liberal Adult Education to the discriminant function.

The percentage of cases correctly classified indicates the discriminant function accuracy in grouping the participants. This discriminant function was 71% accurate in classifying cases. It correctly placed 67.4% of the professors scoring below 126 on PALS and 76.7% of professors scoring above 126 on PALS. Since the analysis had two groups, there is a 50% chance that a Construction Management professor could be placed in a group by chance. Thus, the discriminant function is a 21% improvement over chance in predicting group placement and was above the judgement criterion which required a two-thirds accurate placement. Using this criterion, the groups above and below a score of 126 on PALS can be distinguished on the basis of their educational philosophy preferences.

The discriminant function which was used to classify the cases into these groups was as follows:

$$D = .41(\text{Liberal education}) + .12(\text{Radical education}) - .15(\text{Humanist education}) - 7.7.$$

The group centroid for the group below 126 on PALS was .46, and it was $-.71$ for the group above the 126 on PALS. The canonical correlation which shows the association between the discriminant scores and the groups, was .63 for this study. When this is squared, it indicates that the groups explain 39.7% of the variation in the discriminant function.

The structure matrix shows the relationship between each individual variable and the total discriminant function. The variables with the highest coefficients have the strongest relationship to the discriminant function. They are used to name the discriminant function because they show how closely the variable and the overall discriminant function are related. In descriptive studies, this is important information related to the discriminant function because it identifies the process that distinguishes the teaching style groups from each other. The purpose of the discriminant analysis in this study is to describe the process that discriminates the teaching style groups from each other. When interpreting the structure matrix, variables with coefficients of approximately .3 and above are generally included in the interpretation.

Four variables had sufficient coefficients to be included in the interpretation of the meaning of the discriminant function. They were Liberal Adult Education

(.92), Humanist (-.87), Behaviorist (.56), and Radical Adult Education (-.43). The signs for the coefficients indicate that scores were in opposite directions for Humanist and Radical in contrast to those for Liberal Education and Behaviorist. The Liberal and Behaviorist philosophies assume that the teacher is the center of the learning environment and further that the learner is expected to be passively guided through the process. The teacher is viewed as the expert who is responsible for controlling the environment. The opposite is true of the Humanist and Radical philosophical points of view. These two philosophies are learner centered and facilitative methods are utilized in a learning environments designed to support the learner's personal goals.

The discriminant analysis was calculated to determine if the elements of educational philosophy can be predictive of teaching style groupings which fall above or below 126 on PALS. There is a high percentage of variance explained by the discriminant function between groups and a high percentage of accuracy of prediction into the groups. Therefore, this process successfully discriminated between philosophical alignments and predicted a likely teaching style. The process could be named Locus of Control.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Purpose and Design

Adult Education and Construction Management Education are two diverse and separate disciplines. However, to understand how they are related provides useful information for Adult Education scholars and practitioners and for the providers of university level Construction Management education.

Construction Management Education is an eclectic field which formed from the disciplines of Business, Engineering, Architecture, Industrial, and Technical Education. A single definition of the field of Construction Management has not been articulated (Hauck, 1998, p. 131). While the technical expertise of these multi-disciplined professors is not in question, the measurement of their educational philosophy and teaching styles has not been documented or measured.

The systematic nature of the construction process has become a part of a even more systematic construction curriculum. However the ambiguity and the inherit risk

involved in the construction business have not been incorporated into the Construction Management lessons in the classroom. The real world of Construction Management has become a global environment which encompasses multiple cultures, landscapes, and business environments (Kisk, 1998, p. 208). This globalization of Construction Management requires educators to develop the knowledge and skills needed by society; this must become a primary objective for the future (Nobe & Berryman, 1997, p. 109).

A cornerstone of building a strong construction education curriculum is balancing practical experience with academic inquiry. Construction graduates must possess technical strength combined with the people and communication skills necessary to be successful in the global construction industry of the Twenty-First Century (Mills, Auchey, & Beliveau, 1997, p. 25).

The nature of the instruction, the learning environment, and the construction curriculum are variables which are driven by the educational philosophies and teaching styles of the professors of Construction Management within colleges and universities. The measurement of the educational philosophies and teaching styles of Construction Management professors could be useful in developing many improvements. These improvements are meaningful for the

future students and professors of Construction Management.

The purpose of this study was to describe the adult education philosophies and teaching styles of construction management faculty within American four-year universities and colleges. The full-time faculty of the universities and colleges belonging to the Associated Schools of Construction were the population for this study.

The Associated Schools of Construction is a national organization with 92 member universities and colleges from all geographic regions in the United States. Responses were received from 20% of the 395 Construction Management professors at these universities. These responses represent 49 different national and regional universities from 30 states.

Data were collected related to educational philosophy and teaching style from those who voluntarily participated in the study. Demographic data were also gathered related to age, gender, education level, graduation date, years of teaching and workplace experience, type of institution (national or regional), and whether teaching awards had been received.

The individual educational philosophies of each Construction Management professor was measured by the Philosophy of Adult Education Inventory. Both raw and

standardized scores were computed. A philosophical profile was developed for the group, and analysis of variance were performed to investigate the relationship of philosophical orientation to various demographic variables.

Teaching style for the participants was measured with the Principles of Adult Learning Scale. A total score and factor scores were calculated. As with philosophical orientation, these scores were used to develop a profile of the group and to investigate the relationship with demographic variables.

Further, a discriminant analysis was calculated to investigate whether there was an interaction between educational philosophies and teaching style. The discriminant function was named Locus of Control. This function describes where control exist in terms of the learner by determining whether learning is external or internal to the learner.

Summary of Findings

The demographic data collected indicated that the Construction Management faculty included within the study had an average of 13.6 years of industry experience and 15.4 years of teaching experience. The mean age for the participants was 51.4, and they ranged in age from 29 to 67. Of those responding 94.7% were male and 5.3% were female.

Only 50.7% had doctorates, 43.8% had masters degrees, and 5.5% had bachelors degrees. Those working in national institutions included 55.3% of the respondents while 44.7% worked in regional colleges and universities. Construction Management faculties are dominated by middle-aged and older males. Many have homogeneous credentials within the parallel disciplines of engineering and architecture. In many cases, these professors may be nearing retirement; 40% of those responding are 55 years old and over.

A large majority of the participants supported either the Progressive philosophical point of view or Behaviorist philosophy. Of the Construction Management faculty, 39.5% scored highest on the Progressive philosophy, and 25% favored the Behaviorist philosophy. Some had more than one score which tied for their highest score; this group accounted for 18.4% of the respondents. Of those that were tied on two philosophies the majority were tied between the Behaviorist and Progressive philosophies. In this group, 78% had a high Progressive or Behaviorist score that was tied with at least one other philosophy. This other philosophy was divided equally between the philosophies of the Humanist, Liberal Education, and Behaviorist. Thus, 82.5% of Construction Management faculty had philosophical orientations in the Progressive, Behaviorist, or mixed

Progressive/Behaviorist philosophical points of view.

Progressive education has an emphasis on vocational and utilitarian training, learning by experience, scientific inquiry, community involvement, and responsiveness to social problems (Elias & Merriam, 1995, p. 52). The Behaviorist believes that the role of the teacher is to design an environment that elicits desired behavior toward meeting educational goals. The teacher is a contingency manager, an environmental controller, or behavioral engineer who plans in detail the conditions which bring about desired behaviors in the student (p. 88). The Construction Management faculty possess a combination of attributes that reflect these two philosophical points of view.

The Construction Management faculty had a mean score of 124.47 on PALS. This mean score is indicative of a very teacher-centered approach to teaching. The norm for PALS is 146 with a standard deviation of 20. Most scores fall within one standard deviation above (166) or below (126) that mean. Movement toward these scores indicates an increased commitment to a specific teaching style. Scores that are in the second standard deviation of 20 to 40 points different from the mean indicate a very strong and consistent support of a definite teaching style (Conti, 1991, p. 83). Thus Construction Management faculty had very

strong support for a teacher-centered approach to teaching.

Philosophical orientation was related to the demographic variables of age and year of graduation. Those over the age of 55 favored the Behaviorist philosophy more than it was supported by the other age groups. Likewise, those who had graduated before 1977 had a more Behaviorist point of view. Those who had graduated after 1976 were more Humanist in their point of view.

When PALS scores were grouped by demographic variables, many of these variables were discovered to have a relationship to teaching style. Faculty 55 and over were more likely to spend time to assess students needs. Those faculty with 11-20 years of teaching experience were the ones most likely to take into account a student's previous experience. Those with 21 years or more of industry experience were most likely to take the student's previous experience into account when forming learning activities. Faculty with 11-20 years of experience were most likely to be more facilitative and less rigid in their classroom demeanor. Those graduating in 1976 or before were more likely to assess the needs of students. Although both groups were teacher-centered, faculty at national universities were slightly less teacher-centered than their colleagues at regional universities.

A discriminant function was calculated to investigate the interaction between educational philosophy and teaching style. This process produced a discriminant function which was 71% accurate in classifying group members. The process that distinguished those who were above and those who were below 126 was named Locus of Control.

Conclusions

Construction Management professors have beliefs, values, and attitudes guiding their practice which are consistent with the structure of their profession.

The learner-centered approach that involves students creating their own reality is almost non-existent in Construction Management education.

Construction Management professors have an overwhelming tendency to be very teacher-centered.

For most of the twentieth century, the Progressive and Behaviorist philosophies have dominated public education. The Progressive philosophy supports an educational process that includes vocational education and which seeks to serve the needs of both society and the individual (Elias & Merriam, 1995, pp. 73-74). The expressed beliefs, values, and attitudes on the Philosophy of Adult Education Inventory indicate that a large majority of the Construction Management faculty support this mainstream position. The Behaviorist and Progressive orientations of many of those professors within the study is indicative of this position.

Construction Management professors may not be aware of their philosophical orientation. A better understanding of their own personal philosophy could improve teaching and learning in teaching and learning. The systematic practices of the disciplines of Engineering and Architecture are reflected in their preferred teaching style which is very teacher-centered.

Philosophy of Adult Education Inventory scores can indicate a philosophical orientation for Construction Management faculty. The understanding of adult education philosophy can have a positive impact on the instructional process. "Improving as a teacher involves an introspective growth process that combines exploration and reflection of one's philosophy (the paradigm formed from beliefs, values, and attitudes) and behavior related to teaching and learning" (Heimlich & Norland, 1994, p. 49).

A major dispute among philosophers concerns the relationship between philosophy and action or between theory and practice. There are those who see philosophy and action as mutually exclusive concepts belonging in separate realms. Still others view one's practice and action as derivatives of personal theory and practice. Philosophy should raise questions about what one does and why one does it. The knowledge of philosophy of education distinguishes a

professional educator from a para-professional or a beginning teacher. True professional teachers not only know what they are doing but are keenly aware of the principles and the reasons for so acting (Elias & Merriam, 1995, p. 9).

Construction Management professors report educational philosophies which are not always consistent with their teaching styles.

In spite of trying to develop contractors who will work independently in the workplace, professors of Construction Management do not allow student input into the curriculum.

Student's prior experiences are not highly valued in the instructional process in Construction Management education.

Those Construction Management professors schooled during the early heyday of the Behaviorist movement of the 1950's are primarily Behaviorist and continue to implement these values.

Those professors schooled after 1988 are primarily Humanistic in their philosophy and therefore tend to prefer experiential learning, freedom, individuality, and self-directedness.

Construction Management instruction tends to be very systematic and pragmatic with the teacher both guiding and controlling the student through a competency-based curriculum to solve practical problems. Self-directedness, experiential learning, critical thinking, and individualized instruction are often neglected.

The Progressive philosophical orientation can be indicative of a problems-centered approach to learning. The Progressives tend to see scientific learning as the ideal

form of learning with the curriculum organized around problems that would relate to the experiences of the learners (Elias & Merriam, 1995, p. 64) The Progressive orientation was favored by 39.5% of the Construction Management faculty. Therefore, many of these faculty would be expected to utilize a problem-solving approach and consider the experience of the learner.

Behaviorism is often considered a psychological system which raises fundamental questions that are clearly philosophical in nature. These questions begin with can humans be compared to animals and end with can stimuli elicit predetermined responses in students (Elias & Merriam, 1995, p. 79). "The primary aim of behavioristic techniques is to change behavior and point it in more desirable directions" (Ozmon & Carver, 1981, p. 203). Behaviorism is the strongest orientation for 25% of the Construction Management professors in the study. Therefore, one quarter of this group can be expected to be operating a teacher-centered classroom.

Adult learning principles are very compatible with the beliefs and practices of the Humanists. However, very few of the Construction Management faculty supported the Humanistic orientation. Those supporting Humanistic ideas graduated after 1988. Instead, they overwhelmingly

supported the Progressive and Behaviorist orientations. Those professors practicing from a Behaviorist orientation may find it difficult to practice adult learning principles. Construction Management faculty may not intuitively implement adult learning principles especially those professors who are older and those who graduated before 1977. These two groups were the most Behavioristic in their orientation.

The essential thing about Behaviorist techniques is that rewards, whatever they may be, must be systematic and immediate (Elias & Merriam, 1995, p. 207). The larger question that must be considered relates to who controls the controller? If professors have a Behaviorist approach to teaching, is it beneficial for Construction Management students?

Through decades of experience, many Construction Management professors have learned the importance of the adult learning concept of assessing students and therefore implement this important principle despite their overall educational philosophy.

Extensive teaching experience can contribute to making learning relevant to the student's needs and taking into account student's prior experiences.

Comprehensive industry experience stimulates awareness of the importance of assessing student's needs in the learning process and the need for flexibility for personal development.

Construction Management professors and professional teachers need to know their own personal teaching philosophy

and the degree to which their actions reflect this set of beliefs. An instrument like PALS can be used to assess teaching style and further to identify any inconsistencies in teaching style. This analysis can suggest topics for professional development and areas for personal reflection (Conti, 1989a, p. 15).

Scholars classify teaching style by looking at the personal characteristics of the teacher. For example, Conti (1985a) believed that the traits of the educator matter most and that they collectively form a "synergistic whole which is referred to as a philosophy" (p. 7) to guide the behaviors of a teacher.

The teaching style of Construction Management

Professors is related to several demographic variables. The related variables are age, teaching and work experience, graduation date, and the type of university where the professors is currently employed. The examination of these variables and the PALS results indicate teacher-centeredness crosses all variables.

Educational philosophy and teaching style are closely related. The two constructs of educational philosophy and teaching style are two sides of the same coin. One side of the coin is abstract, is philosophical in nature, is theoretical, and describes a mental process. The other side

is concrete, is practical, and describes the actions of the teacher.

The philosophical side of the coin is what the teacher thinks while the teaching style side of the coin is what the teacher practices. This analogy of the two-sided coin might be described as the praxis of Construction Management education. The traits of the educator matter most, and these traits collectively form a synergistic whole which is referred to as a philosophy. This philosophy guides the behaviors of the teacher (Conti, 1985, p. 7).

This relationship was further clarified and defined by the discriminant analysis. This analysis showed that teaching style and educational philosophy are linked. The interrelated concepts are driving the actions of the teacher. The process that distinguishes this relationship between educational philosophy and teaching style is Locus of Control. The Locus of Control within a classroom can be directed either internally toward the learners or externally toward forces in the environment beyond the learner. Those who are extremely teacher centered maintain a focus on either their actions or upon the content. The opposite of this is placing a greater emphasis on the needs, interests, and experiences of the learner.

Recommendations

In order for teachers to critically examine why they teach the way they do, a better understanding of one's own philosophy is essential. Therefore, Construction Management professors should examine and identify their personal teaching philosophy. Construction Management educators serve the needs of industry by developing the student into a productive and knowledgeable resource. Philosophy is often viewed as being strictly theoretical, inherently abstract, and completely impractical. Therefore, in a pragmatic field such as Construction Management, it is not surprising to see educational philosophy largely ignored.

The systematic behavioral method of teaching combined with adult learning activities can get the learner involved. The role of the teacher should be modified from the role of a manager or organizer to one of partner or facilitator. Controlling and guiding students is less necessary when it is realized they are adults, who are capable of empowering themselves to be more self-directed.

Adult learning theory suggests several things that would facilitate learning within the Construction Management field. These include incorporating critical thinking into the curriculum. Students should be challenged to solve problems on their own. Self-directed learning activities

allowing students to take responsibility for pieces of the learning process should be fostered. Experiential activities are challenges the teacher should embrace. The teacher should form an industry advisory committee to gain input from those hiring graduates of Construction Management programs. These activities can evolve the teacher-centered classroom toward a more learner-centered environment which enhances the overall education students receive.

The highly teacher-centered style of the Construction Management professors defines learning as changes in a student's behavior. This behavior can be measured by behavioral objectives which specify the competencies which must be demonstrated by the student. These competencies can be evaluated with criterion-referenced tests.

Although the classroom environment in Construction Management is highly structured by the instructor, teaching students to be critical thinkers is essential in the Construction Management classroom of the future. The construction workplace is not systematic and concise, but rather it is filled with ambiguous situations. The teacher-centered classroom denies the student the opportunity to be more self-directed and creative.

In order to develop students who can think critically on the job and who will become lifelong learners, the

Construction Management teacher should become much more creative in selecting instructional methods. Adult learning theorists such as Knowles (1970), Kidd (1972), and Brookfield (1976) strongly encourage the adult educator to be a facilitator and a mentor and to practice the collaborative mode. In order to move in this direction, teachers could benefit by knowing their own personal teaching philosophy and "the degree to which their actions reflect this set of beliefs" (Conti, 1989a, p. 15).

The Construction Management curriculum should become more experiential. Lessons should incorporate the real world whenever possible. Hands-on activities are premium opportunities for learning and teaching. The inclusion of self-directed activities could allow for the personal development of the learner. Therefore, students should be encouraged to create their own learning experiences.

One way to move toward a more learner-centered approach is to incorporate the use of case studies in the Construction Management curriculum. The case study method which has been successfully used in schools of business. Since these case studies may not currently exist, the resourceful teacher could develop case studies in cooperation with representatives of the construction industry.

Service activities within the community allow for a learner-centered activity which benefits all stakeholders. These activities can be incorporated into the curriculum and offer significant opportunities for experiential learning. These activities could include projects such as Habitat for Humanity, community projects, and campus improvement projects.

Although adult learning principles are highly compatible with the Humanistic orientation, they can be incorporated into any philosophy and can contribute to student success when the teacher implements a consistent style in the classroom; indeed, "consistency within key teaching style elements may be the most important element in fostering improved student achievement" (Conti, 1989, p. 14). The challenge for the teacher is to incorporate appropriate adult learning principles without debasing their philosophy. Teachers must remain consistent by translating the learning principles to fit the tenets of their philosophy.

Tools for measuring educational philosophies and teaching styles are available. The Philosophy of Adult Education Inventory and the Principles of Adult Learning Scale are resources available to individual faculty members or administrators. These self-scoring instruments allow an

economical way for faculties to assess and explore their personal educational philosophies and teaching style. By using such instruments, faculty could gain valuable information for analyzing and reflecting upon their actions; this can lead to a better understanding of one's professional practice.

Because many professors of Construction Management have been schooled in very technical disciplines such as engineering, architecture, and business, they are competent in their content area. However, these disciplines do not teach those involved it how to teach. If those who are trained in the content area plan to teach others, they should be provided fundamental instruction in adult learning principles. This instruction could be in the form of faculty development activities that include seminars on adult learning, teaching styles, and educational philosophies as they pertain to Construction Management. Awareness of alternative ways of teaching can enhance future instructional activities.

Future Implications for the Field

An analysis of the demographic data from the respondents reveals some factors that have future implications for the field. The field of Construction Management has difficulty in attracting women faculty,

students, and workers. Human resource shortages are predicted within Construction Management. There could be many Construction Management faculty openings in the next decade.

White males, the traditional entrants in the technical worker pool of the construction industry, accounted for 31.6% of the labor force growth and 15% of the net labor force growth between 1985 and 2000 (Yates, 1993, p. 14). The current and future demographic trends in the United States may force construction industry human resource managers to seek nontraditional construction workers. The segment of the population that has the most potential for supplying the construction industry with the largest supply of these new workers is white females. In the year 2000, the workforce will be made up of 42% white females, 13% non-white females, 7% non-white men, 13% immigrant men, and 9% immigrant women. Even though white females have the greatest potential for contributing to the construction and engineering workforce, most sources suggest that it is unlikely that women will fit into the current construction industry environment (Yates, 1993, p. 15).

Only 5.3% of the Construction Management professors participating within this study were female. The male dominated discipline of Construction Management provides a

challenging environment for students of color and for females. The construction site, construction classroom, construction curriculum, and the university faculties of Construction Management are populated with white males.

The nontraditional Construction Management student will likely become a part of the classroom of the future. Therefore, the faculty of the future has an opportunity to mentor groups previously missing in the construction classroom. Importance should be given to diversity training and to multiculturalism within the curriculum. As these nontraditional students enter the field, instructors will be challenged to address their special needs. Such demands will challenge the existing dominant teacher-centered approach of the field.

Recruitment of nontraditional Construction Management students could fill the anticipated need for competent workers for the future. Construction Management programs can benefit by developing strategies to market their product, which is technical education.

Building a nontraditional Construction Management faculty can enhance student recruitment in the future. Consequently, forward-thinking administrators should consider seeking qualified female and minority faculty members. Synergistic alignments such as these will enhance

the future and diversify the field of Construction Management. Likewise, they will place demands for change which encourage the adoption of adult learning principles with their emphasis on a more learner-centered approach within an existing teacher-centered discipline.

Summary

Construction Management professors are driven to produce competent graduates to fill the important executive and managerial positions in the construction industry. Teaching with a pragmatic style is not within itself sufficient to meet the future challenges of a global construction market. A changing external environment demands that many previous practices within Construction Education be re-examined.

When the construction business is examined, it is one of the most entrepreneurial of all industries. That fact poses a challenge to the traditional instructional methodologies which have been utilized in many disciplines including Construction Management. A significant question for the field concerns Construction Management programs which will produce creative entrepreneurs to run the construction companies of tomorrow.

A portion of the answer can be found by assessing the current state of Construction Management education. The

demand for graduates is high and is likely to remain that way for the coming decades. However, nontraditional students need to join the ranks of traditional Construction Management students in order to meet the future demands for human resources in the industry.

Another real concern is that many professors are near retirement age at a time when undergraduate and graduate student numbers are increasing. Only 50.3% of the respondents in this study possessed doctorates, and the average age was over 50. This indicates the real threat of a faculty shortage in Construction Management exists.

If the Construction Management programs are to serve as a training ground for developing the future entrepreneurial leaders of the field, they should begin to incorporate more learner-centered practices which are congruent with adult learning principles and which in turn will foster more self-directed graduates.

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Appendix A: Data and Results

Table 1

Table 1 presents the results of the regression analysis. The dependent variable is the log of the number of employees. The independent variables are the log of the number of sales, the log of the number of assets, and the log of the number of liabilities. The results show that the log of the number of sales is positively correlated with the log of the number of employees, while the log of the number of assets and the log of the number of liabilities are negatively correlated with the log of the number of employees.

Table 2: Descriptive Statistics

Table 2 provides descriptive statistics for the variables used in the regression analysis. The mean number of employees is 100, the mean number of sales is 1000, the mean number of assets is 10000, and the mean number of liabilities is 10000.

APPENDIX

The following table provides a detailed breakdown of the data used in the regression analysis. The variables are the log of the number of employees, the log of the number of sales, the log of the number of assets, and the log of the number of liabilities. The table shows the mean, standard deviation, and correlation coefficients for each variable.

Table 3: Correlation Matrix

Table 3 shows the correlation matrix for the variables used in the regression analysis. The variables are the log of the number of employees, the log of the number of sales, the log of the number of assets, and the log of the number of liabilities.

Table 4: Regression Results

Table 4 presents the results of the regression analysis. The dependent variable is the log of the number of employees. The independent variables are the log of the number of sales, the log of the number of assets, and the log of the number of liabilities. The results show that the log of the number of sales is positively correlated with the log of the number of employees, while the log of the number of assets and the log of the number of liabilities are negatively correlated with the log of the number of employees.

Table 5: Robustness Checks

Table 5 presents the results of the robustness checks. The dependent variable is the log of the number of employees. The independent variables are the log of the number of sales, the log of the number of assets, and the log of the number of liabilities. The results show that the log of the number of sales is positively correlated with the log of the number of employees, while the log of the number of assets and the log of the number of liabilities are negatively correlated with the log of the number of employees.

Background Information

Directions

Thank you for agreeing to help with our study which is investigating the educational philosophies and teaching styles of Construction Management instructors. Please complete each of the three sections in this booklet: Background Information, Philosophy of Adult Education Inventory, and Principles of Adult Learning Scale. All of your responses should be marked in this booklet, and the booklet may be returned in the enclosed stamped, self-addressed envelope. Please note that every item in the Philosophy of Adult Education Inventory requires a response.

Background Information

Age: _____

Gender: ___ Male ___ Female

Education: Please check your highest level of formal education:

___ Bachelors Degree

___ Master's Degree

___ Doctoral Degree

Graduation: Year of graduation with the highest degree: _____

Place of Graduation: In what country did you receive your highest degree? _____

Teaching Experience: Total number of years (including this one) in all areas of teaching: _____

Workplace Experience: Years of industrial experience prior to teaching: _____

Type of Institution: At which type institution do you teach?

___ National university

___ Regional university

Optional: Name of university _____

Teaching Awards: Have you received any awards for excellence in teaching?

___ No

___ Yes

If yes, please tell how many and list them.

Summary of Results: If you would like an abstract of this research which summarizes the study, please list your name and address below:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

PALS

Principles of Adult Learning Scale

Directions: The following survey contains several things that a teacher of adults might do in a classroom. You may personally find some of them desirable and find others undesirable. For each item please respond to the way you most frequently practice the action described in the item. Your choices are *Always*, *Almost Always*, *Often*, *Seldom*, *Almost Never*, and *Never*. On your answer sheet, circle 0 if you always do the event; circle number 1 if you almost always do the event; circle number 2 if you often do the event; circle number 3 if you seldom do the event; circle number 4 if you almost never do the event; and circle number 5 if you never do the event. If the item **does not apply** to you, circle number 5 for never.

<i>Always</i>	<i>Almost Always</i>	<i>Often</i>	<i>Seldom</i>	<i>Almost Never</i>	<i>Never</i>
0	1	2	3	4	5

Always ————— *Never*

- | | | | | | | |
|--|---|---|---|---|---|---|
| 1. I allow students to participate in developing the criteria for evaluating their performance in class. | 0 | 1 | 2 | 3 | 4 | 5 |
| 2. I use disciplinary action when it is needed. | 0 | 1 | 2 | 3 | 4 | 5 |
| 3. I allow older students more time to complete assignments when they need it. | 0 | 1 | 2 | 3 | 4 | 5 |
| 4. I encourage students to adopt middle-class values. | 0 | 1 | 2 | 3 | 4 | 5 |
| 5. I help students diagnose the gaps between their goals and their present level of performance. | 0 | 1 | 2 | 3 | 4 | 5 |
| 6. I provide knowledge rather than serve as a resource person. | 0 | 1 | 2 | 3 | 4 | 5 |
| 7. I stick to the instructional objectives that I write at the beginning of a program. | 0 | 1 | 2 | 3 | 4 | 5 |
| 8. I participate in the informal counseling of students. | 0 | 1 | 2 | 3 | 4 | 5 |
| 9. I use lecturing as the best method for presenting my subject material to adult students. | 0 | 1 | 2 | 3 | 4 | 5 |
| 10. I arrange the classroom so that it is easy for students to interact. | 0 | 1 | 2 | 3 | 4 | 5 |
| 11. I determine the educational objectives for each of my students. | 0 | 1 | 2 | 3 | 4 | 5 |
| 12. I plan units which differ as widely as possible from my students' socio-economic backgrounds. | 0 | 1 | 2 | 3 | 4 | 5 |

	Always	—————					Never
13. I get a student to motivate himself/herself by confronting him/her in the presence of classmates during group discussions.	0	1	2	3	4	5	
14. I plan learning episodes to take into account my students' prior experiences.	0	1	2	3	4	5	
15. I allow students to participate in making decisions about the topics that will be covered in class.	0	1	2	3	4	5	
16. I use one basic teaching method because I have found that most adults have a similar style of learning.	0	1	2	3	4	5	
17. I use different techniques depending on the students being taught.	0	1	2	3	4	5	
18. I encourage dialogue among my students.	0	1	2	3	4	5	
19. I use written tests to assess the degree of academic growth in learning rather than to indicate new directions for learning.	0	1	2	3	4	5	
20. I utilize the many competencies that most adults already possess to achieve educational objectives.	0	1	2	3	4	5	
21. I use what history has proven that adults need to learn as my chief criteria for planning learning episodes.	0	1	2	3	4	5	
22. I accept errors as a natural part of the learning process.	0	1	2	3	4	5	
23. I have individual conferences to help students identify their educational needs.	0	1	2	3	4	5	
24. I let each student work at his/her own rate regardless of the amount of time it takes him/her to learn a new concept.	0	1	2	3	4	5	
25. I help my students develop short-range as well as long-range objectives.	0	1	2	3	4	5	
26. I maintain a well-disciplined classroom to reduce interferences to learning.	0	1	2	3	4	5	
27. I avoid discussion of controversial subjects that involve value judgements.	0	1	2	3	4	5	
28. I allow my students to take periodic breaks during the class.	0	1	2	3	4	5	
29. I use methods that foster quiet, productive, deskwork.	0	1	2	3	4	5	
30. I use tests as my chief method of evaluating students.	0	1	2	3	4	5	
31. I plan activities that will encourage each student's growth from dependence on others to greater independence.	0	1	2	3	4	5	

	Always	—————				Never
32. I gear my instructional objectives to match the individual abilities and needs of the students.	0	1	2	3	4	5
33. I avoid issues that relate to the student's concept of himself/herself.	0	1	2	3	4	5
34. I encourage my students to ask questions about the nature of their society.	0	1	2	3	4	5
35. I allow a student's motives for participating in continuing education to be a major determinant in the planning of learning objectives.	0	1	2	3	4	5
36. I have my students identify their own problems that need to be solved.	0	1	2	3	4	5
37. I give all students in my class the same assignment on a given topic.	0	1	2	3	4	5
38. I use materials that were originally designed for students in elementary and secondary schools.	0	1	2	3	4	5
39. I organize adult learning episodes according to the problems that my students encounter in everyday life.	0	1	2	3	4	5
40. I measure a student's long-term educational growth by comparing his/her total achievement in class to his/her expected performance as measured by national norms from standardized tests.	0	1	2	3	4	5
41. I encourage competition among my students.	0	1	2	3	4	5
42. I use different materials with different students.	0	1	2	3	4	5
43. I help students relate new learning to their prior experiences.	0	1	2	3	4	5
44. I teach units about problems of everyday living.	0	1	2	3	4	5

PAEI

Philosophy of Adult Education Inventory

Each of the 15 items on the Inventory begins with an incomplete sentence, followed by five different options that might complete the sentence. Find the corresponding number and letter on the answer sheet and indicate your response by circling a number from 1 (**Strongly Disagree**) to 7 (**Strongly Agree**). Please rate ALL the responses. There are no "right" or "wrong" ratings.

- | | <u>SD</u> ----- <u>SA</u> |
|---|---------------------------|
| 1. In planning an educational activity, I am most likely to: | |
| (a) identify, in conjunction with learners, significant social and political issues and plan learning activities around them. | 1 2 3 4 5 6 7 |
| (b) clearly identify the results I want and construct a program that will almost run itself. | 1 2 3 4 5 6 7 |
| (c) begin with a lesson plan that organizes what I plan to teach, when and how. | 1 2 3 4 5 6 7 |
| (d) assess learners' needs and develop valid learning activities based on those needs. | 1 2 3 4 5 6 7 |
| (e) consider the areas of greatest interest to the learners and plan to deal with them regardless of what they may be. | 1 2 3 4 5 6 7 |
| 2. People learn best: | |
| (a) when the new knowledge is presented from a problem-solving approach. | 1 2 3 4 5 6 7 |
| (b) when the learning activity provides for practice and repetition. | 1 2 3 4 5 6 7 |
| (c) through dialogue with other learners and a group coordinator. | 1 2 3 4 5 6 7 |
| (d) when they are free to explore, without the constraints of a "system." | 1 2 3 4 5 6 7 |
| (e) from an "expert" who knows what he or she is talking about. | 1 2 3 4 5 6 7 |
| 3. The primary purpose of Adult Education is: | |
| (a) to facilitate personal development on the part of the learner. | 1 2 3 4 5 6 7 |
| (b) to increase learners' awareness of the need for social change and to enable them to effect such change. | 1 2 3 4 5 6 7 |
| (c) to develop conceptual and theoretical understanding. | 1 2 3 4 5 6 7 |
| (d) to establish the learners' capacity to solve individual and societal problems. | 1 2 3 4 5 6 7 |
| (e) to develop the learners' competency and mastery of specific skills. | 1 2 3 4 5 6 7 |
| 4. Most of what people know: | |
| (a) is a result of consciously pursuing goals, solving problems as they go. | 1 2 3 4 5 6 7 |
| (b) they have learned through critical thinking focused on important social and political issues. | 1 2 3 4 5 6 7 |
| (c) they have learned through a trial-and-feedback process. | 1 2 3 4 5 6 7 |
| (d) they have gained through self-discovery rather than some "teaching" process. | 1 2 3 4 5 6 7 |
| (e) they have acquired through a systematic educational process. | 1 2 3 4 5 6 7 |

SD _____ SA

5. Decisions about what to include in an educational activity:
- (a) should be made mostly by the learner in consultation with a facilitator. 1 2 3 4 5 6 7
 - (b) should be based on what learners know and what the teacher believes they should know at the end of the activity. 1 2 3 4 5 6 7
 - (c) should be based on a consideration of key social and cultural situations. 1 2 3 4 5 6 7
 - (d) should be based on a consideration of the learner's needs, interests and problems. 1 2 3 4 5 6 7
 - (e) should be based on careful analysis by the teacher of the material to be covered and the concepts to be taught. 1 2 3 4 5 6 7
6. Good adult educators start planning instruction:
- (a) by considering the end behaviors they are looking for and the most efficient way of producing them in learners. 1 2 3 4 5 6 7
 - (b) by identifying problems that can be solved as a result of the instruction. 1 2 3 4 5 6 7
 - (c) by clarifying the concepts or theoretical principals to be taught. 1 2 3 4 5 6 7
 - (d) by clarifying key social and political issues that affect the lives of the learners. 1 2 3 4 5 6 7
 - (e) by asking learners to identify what they want to learn and how they want to learn it. 1 2 3 4 5 6 7
7. As an adult educator, I am most successful in situations:
- (a) that are unstructured and flexible enough to follow learners' interests. 1 2 3 4 5 6 7
 - (b) that are fairly structured, with clear learning objective and built-in feedback to the learners. 1 2 3 4 5 6 7
 - (c) where I can focus on practical skills and knowledge that can be put to use in solving problems. 1 2 3 4 5 6 7
 - (d) where the scope of the new material is fairly clear and the subject matter is logically organized. 1 2 3 4 5 6 7
 - (e) where the learners have some awareness of social and political issues and are willing to explore the impact of such issues on their daily lives. 1 2 3 4 5 6 7
8. In planning an educational activity, I try to create:
- (a) the real world—problems and all—and to develop learners' capacities for dealing with it. 1 2 3 4 5 6 7
 - (b) a setting in which learners are encouraged to examine their beliefs and values and to raise critical questions. 1 2 3 4 5 6 7
 - (c) a controlled environment that attracts and holds learners, moving them systematically towards the objective(s). 1 2 3 4 5 6 7
 - (d) a clear outline of the content and the concepts to be taught. 1 2 3 4 5 6 7
 - (e) a supportive climate that facilitates self-discovery and interaction. 1 2 3 4 5 6 7

SD _____ SA

9. The learners' feelings during the learning process:
- (a) must be brought to the surface in order for learners to become truly involved in their learning. 1 2 3 4 5 6 7
 - (b) provide energy that can be focused on problems or questions. 1 2 3 4 5 6 7
 - (c) will probably have a great deal to do with the way they approach their learning. 1 2 3 4 5 6 7
 - (d) are used by the skillful adult educator to accomplish the learning objective(s). 1 2 3 4 5 6 7
 - (e) may get in the way of teaching by diverting the learners' attention. 1 2 3 4 5 6 7
10. The teaching methods I use:
- (a) focus on problem-solving and present real challenges to the learner. 1 2 3 4 5 6 7
 - (b) emphasize practice and feedback to the learner. 1 2 3 4 5 6 7
 - (c) are mostly non-directive, encouraging the learner to take responsibility for his/her own learning. 1 2 3 4 5 6 7
 - (d) involve learners in dialogue and critical examination of controversial issues. 1 2 3 4 5 6 7
 - (e) are determined primarily by the subject or content to be covered. 1 2 3 4 5 6 7
11. When learners are uninterested in a subject, it is because:
- (a) they do not realize how serious the consequences of not understanding or learning the subject may be. 1 2 3 4 5 6 7
 - (b) they do not see any benefit for their daily lives. 1 2 3 4 5 6 7
 - (c) the teacher does not know enough about the subject or is unable to make it interesting to the learner. 1 2 3 4 5 6 7
 - (d) they are not getting adequate feedback during the learning process. 1 2 3 4 5 6 7
 - (e) they are not ready to learn it or it is not a high priority for them personally. 1 2 3 4 5 6 7
12. Differences among adult learners:
- (a) are relatively unimportant as long as the learners gain a common base of understanding through the learning experience. 1 2 3 4 5 6 7
 - (b) enable them to learn best on their own time and in their own way. 1 2 3 4 5 6 7
 - (c) are primarily due to differences in their life experiences and will usually lead them to make different applications of new knowledge and skills to their own situations. 1 2 3 4 5 6 7
 - (d) arise from their particular cultural and social situations and can be minimized as they recognize common needs and problems. 1 2 3 4 5 6 7

	<u>SD</u> ----- <u>SA</u>
12 (continued). Differences among adult learners:	
(e) will not interfere with their learning if each learner is given adequate opportunity for practice and reinforcement.	1 2 3 4 5 6 7
13. Evaluation of learning outcomes:	
(a) is not of great importance and may not be possible, because the impact of learning may not be evident until much later.	1 2 3 4 5 6 7
(b) should be built into the system, so that learners will continually receive feedback and can adjust their performance accordingly.	1 2 3 4 5 6 7
(c) is best done by the learners themselves, for their own purposes.	1 2 3 4 5 6 7
(d) lets me know how much learners have increased their conceptual understanding of new material.	1 2 3 4 5 6 7
(e) is best accomplished when the learner encounters a problem, either in the learning setting or the real world, and successfully resolves it.	1 2 3 4 5 6 7
14. My primary role as a teacher of adults is to:	
(a) guide learners through learning activities with well-directed feedback.	1 2 3 4 5 6 7
(b) systematically lead learners step by step in acquiring new information and understanding underlying theories and concepts.	1 2 3 4 5 6 7
(c) help learners identify and learn to solve problems.	1 2 3 4 5 6 7
(d) increase learners' awareness of environmental and social issues and help them to have an impact on these situations.	1 2 3 4 5 6 7
(e) facilitate, but not to direct, learning activities.	1 2 3 4 5 6 7
15. In the end, if learners have not learned what was taught:	
(a) the teacher has not actually taught.	1 2 3 4 5 6 7
(b) they need to repeat the experience, or a portion of it.	1 2 3 4 5 6 7
(c) they may have learned something else which they consider just as interesting or useful.	1 2 3 4 5 6 7
(d) they do not recognize how learning will enable them to significantly influence society.	1 2 3 4 5 6 7
(e) it is probably because they are unable to make practical application of new knowledge to problems in their daily lives.	1 2 3 4 5 6 7

PALS Permission Letter

OKLAHOMA STATE UNIVERSITY



School of Educational Studies

College of Education
204 Willard
Stillwater, Oklahoma 74078-4045
405-744-6275; Fax 405-744-7758

October 30, 1998

John Martin
6313 West Simpson Road
Edmond, Oklahoma 73003

Dear John:

It is always exciting to hear of new ways that researchers have found to use the Principles of Adult Learning Scale (PALS). PALS has been published in ERIC and several journals so that researchers like yourself can use it at no cost. Therefore, feel free to use it in the ways you believe are most appropriate; since I am the copyright holder for PALS, you may consider this letter as your formal permission to reproduce PALS. Enclosed are some materials that you may find useful for your study. If you need any technical assistance while working on your study, call me at either 405 744-9192 (office) or 405 624-3263 (home and fax). Let me know what you find. Good luck.

- Adult Education
- Aviation and Space Education
- Higher Education
- Human Resource Development
- Organization and Leadership
- Research and Evaluation
- Social Foundations
- Student Personnel
- Technology

Sincerely yours,

Gary J. Conti
Professor of
Adult Education



Letter To Participants
OKLAHOMA STATE UNIVERSITY



School of Educational Studies

College of Education
204 Willard
Stillwater, Oklahoma 74078-4045
405-744-6275; Fax 405-744-7758

Re: Survey of Educational Philosophy and Teaching Style in Construction Management

Construction Management is fast emerging as one of the hottest majors on many university campuses in America. Many departments want to improve the delivery of instruction, the curriculum, and their most important resource—the faculty. In order to improve, we must know our current status.

One important element of our current status concerns the educational beliefs of those teaching Construction Management in the universities that are members of the Associated Schools of Construction. To find this out, we are currently conducting a study to measure the educational philosophies and teaching styles of faculty members in these programs. In order for this study to be successful, we need your help. Would you please complete enclosed Philosophies of Adult Education Inventory and the Principles of Adult Learning Scale? It will take approximately 20 to 30 minutes to complete the two scales.

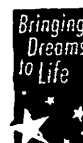
Adult Education
Aviation and Space
Education
Higher Education
Human Resource
Development
Organization and
Leadership
Research and
Evaluation
Social Foundations
Student Personnel
Technology

Please return the completed surveys in the envelope provided to John Martin, 6313 West Simpson Road, Edmond, Oklahoma 73003. If you would like an abstract of the study once it is complete, please include your name and address on the answer sheet. Thank you for your time and cooperation.

Sincerely yours,

John W. Martin

The Campaign for OSU



IRB FORM

**OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD**

Date: April 5, 1999 IRB #: ED-99-093


Proposal Title: "THE EDUCATIONAL PHILOSOPHIES AND TEACHING STYLES OF
CONSTRUCTION MANAGEMENT FACULTY"

Principal Investigator(s): Dr. Gary Conti
John Wesley Martin

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

Signature:



Carol Olson, Director of University Research Compliance

April 5, 1999
Date

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modification to the research project approved by the IRB must be submitted for approval. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

VITA

John Wesley Martin

Candidate for the Degree of

Doctor of Education

Thesis: ADULT EDUCATION PHILOSOPHIES AND TEACHING STYLES OF
CONSTRUCTION MANAGEMENT FACULTY OF THE ASSOCIATED
SCHOOLS OF CONSTRUCTION

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in Laurel, Mississippi, On March
15, 1954, the son of William G. and Barbara N.
Martin.

Education: Graduated from John Marshall High School,
Oklahoma City, Oklahoma in May 1972; received a
Bachelor of Business Administration in Management
and a Master of Business Administration in Finance
from the University of Central Oklahoma, Edmond,
Oklahoma in May 1987 and December 1988,
respectively. Completed the requirements for the
Doctor of Education with a major in Occupational
and Adult Education at Oklahoma State University,
Stillwater, Oklahoma in July 1999.

Experience: Raised in Oklahoma City, began working in
the construction industry as a teenager. Began my
own company, Sun Construction Company, in 1974 and
continued as a general contractor through 1999.
Between 1989 and 1991 I spent three years working
in economic development and business consulting
while working at the University of Central
Oklahoma and at Canadian Valley Vocational
Technical School.