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The Influence of Departmental Affiliation and Pedagogical Training on Faculty Adoption of Innovative Pedagogical Methods in Georgia Technical Colleges

Linda G. Grisham
University of Nebraska at Lincoln, lgrisham@hotmail.com

THE INFLUENCE OF DEPARTMENTAL AFFILIATION AND PEDAGOGICAL TRAINING ON FACULTY ADOPTION OF INNOVATIVE PEDAGOGICAL METHODS IN GEORGIA TECHNICAL COLLEGES

by

Linda G. Grisham

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THE INFLUENCE OF DEPARTMENTAL AFFILIATION AND PEDAGOGICAL TRAINING ON FACULTY ADOPTION OF INNOVATIVE PEDAGOGICAL METHODS IN GEORGIA TECHNICAL COLLEGES

Linda G. Grisham, Ph. D.

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Advisor: Sheldon L. Stick

This quantitative study used factorial design and survey research to examine the influence of departmental affiliation and pedagogical training on full-time faculty members' (n = 2193) working in the Technical College System of Georgia. The tool for data collections was a web-survey instrument, modified with permission from the Faculty Survey on Teaching, Learning and Assessment" (Matney, 2001).

Two independent variables (departmental affiliation and level of pedagogical training in active learning practices) and three dependent variables (participation in the scholarship of teaching and learning, introduction of new teaching techniques, and active learning practices) were measured by responses on a 5-point Likert-scale.

Descriptive statistics and a one-way ANOVA demonstrated whether there were differences among groups. Possible interactions between the two independent variables were considered by employing a two-factor ANOVA.

It was determined that the faculty was highly inclined to include active-learning techniques in their teaching and their disciplinary area had no apparent impact on such decisions. Faculty departmental affiliation had a statistically significant impact on instructors' decisions to use active-learning assessment and to participate in the scholarship of teaching and learning activities.

Interpretation of the data demonstrated a significant difference among the levels of pedagogical training (professional development or college courses) and faculty persons' participation in the scholarship of teaching and learning and subsequent use of active-learning techniques and assessments.

The findings have implications to provide formal and informal faculty-development programs, and such learning experiences need to be of a defined duration.

DEDICATION

In memory of my beloved husband, James

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INTRODUCTION

Background

Evolution of the Faculty Role

The status and importance of undergraduate teaching has changed during the evolution of higher education in the United States. Colonial colleges were predicated on the British model and emphasized building the character and leadership abilities of students. Instructors served as tutors and mentors, and oftentimes shared living quarters with students (Boyer, 1990), until they were able to secure a more viable position; most became clergy.

Toward the last half of the 18th century, permanent professional faculty began to supplement the transient tutors. At both Harvard and Yale, philanthropic bequests enabled the endowment of professorships. By 1750, Harvard had two professors and a permanent tutor. By 1800, the number of permanent professorships at Harvard had increased by four. Endowments also permitted Yale to achieve several permanent professorships by 1800. Other colleges, including Brown, Princeton, and Dartmouth, quickly followed suit by establishing permanent professorships in addition to resident tutors. Although most members of a faculty continued to shoulder the responsibility of developing students' character, instructional duties increasingly focused on particular subject areas, most notably divinity, philosophy, and ancient languages. The primary responsibility of those early professors was supervision of instruction in their area (Finkelstein, 1997).

By the end of the 18th century, professionals (physicians, lawyers, and clergy) who had assumed professorships began to identify themselves primarily as college teachers and thus brought an increased commitment to college teaching. Evidence of professors' improved commitments to college teaching, between 1750 and 1800, included the increased average length of tenure at a given institution and a declining proportion of such persons that pursued professional careers outside of academia. "At Yale, the average tenure of professors increased from 21.5 years to 36.8 years, and at Brown it increased from 30.7 years to 36.0 years" (Finkelstein, 1997, p. 83).

By the late 19th century instructional-personnel participation in research gained momentum as American universities began to emulate the research-oriented Germanic university model. Daniel Gilman, first president of Johns Hopkins University, proposed his philosophy of advancing knowledge through research. Under his leadership Johns Hopkins University became the standard for the modern research university. This idea of the research university spread as Johns Hopkins' trained scholars moved on to serve at other universities (Johns Hopkins University, 2009).

In 1895, William Rainey Harper, President of the University of Chicago, stated that advancements in rank and salary would be awarded primarily on research productivity, thereby linking academic success to research productivity (Boyer Commission, 1998). The emphasis on research activities and graduate education in universities continued and were furthered during the war years of the 1940s when the government began funding scientific research. "Higher learning and government had, through scientific collaboration, changed the course of history—and the impact on the

academy would be both consequential and enduring" (Boyer, 1990, p. 10). The professorate was now identified with scholarly pursuits in the academic discipline.

That emphasis on applied scientific research was reiterated during the Cold War of the late 1940s through the 1970s with increased government funding for defense-related research and development. Federal sponsorship for research was funneled into universities through major government channels including agricultural, military, atomic-energy, and medical research. The research funded by these sponsors primarily promoted the needs of the sponsor.

During the mid-1960s there was a pronounced governmental emphasis on domestic policies, exemplified by Lyndon Johnson's Great Society reforms which included the establishment of Medicare and Medicaid, food stamps and Head Start. The result was a marked increase in funding from the Department of Health, Education, and Welfare for empirical and applied research (U.S. Department of State, 2009). Of note was a sudden upsurge in federal financial support for the arts and humanities with the establishment of a National Foundation on the Arts and the Humanities Act (Koostra, 2000). The National Science Foundation, the National Aeronautics and Space Administration, and the Atomic Energy Commission, all became equally involved with supporting research endeavors at the nation's postsecondary institutions, and the outcomes were pronounced; space travel, deep-space exploration, energy options, medical innovations, etc. (Freeland, 1997; Geiger, 1999).

Those funding opportunities facilitated expansion of universities' facilities, development of new science programs, and support for graduate students. Importantly, the support for advanced graduate study was not restricted to the sciences and there was a

marked increase in grants and fellowships made available to worthy applicants in the health-related professions, medical-support professions, special-education areas, and foreign languages. The National Defense Education Act of 1958 appropriated funds to support higher education in the form of aid to new programs and scholarships and fellowships (Freeland, 1997; Geiger, 1999).

Donations from the private sector, as contributions to institutional foundations and/or to support specific types of research, also contributed to the expanding revenue sources available to colleges and universities. During the late 1960s and early 1970s a strong economy and new tax incentives allowed higher education institutions to increase their financial support through successful fundraising campaigns and increased corporate donations (Freeland, 1997).

Increased external funding, particularly for research, led to growth in graduate programs and even schools, as there seemed to be an apparently endless supply of newly graduated persons having earned their Ph.D. and/or Ed.D. Degrees. Many higher education institutions engaged in the so-called creeping growth of graduate education; seeking to obtain their respective shares of money, despite the fact such endeavors did not comport with their declared missions. The milieu seemed to be written in the arena of scholarship and in focusing on that area, institutions became more attractive to potential students and concomitantly were able to compete more effectively for research dollars.

The cycle continued with an explosion of advanced graduate programs of study and a simultaneous burgeoning of persons hired as instructional faculty members. “Their teaching and their writings brought the most current and specialized academic knowledge into the classrooms of all types of institutions” (Geiger, 1999, p. 63). The faculty-reward

system reflected the importance of research and publication while service and undergraduate teaching were given only passing acknowledgement (Boyer, 1990). The code-words for newly hired instructional faculty was “publish or perish,” and most heeded that admonition.

Ericksen (1985) provided evidence of the increased importance of research in the faculty-reward system in a 1976 study of 65 professors interviewed regarding their perceptions of the role research/scholarship played in the professorship. Those interviews led to a conclusion that within the short period of just a decade a preponderance of assistant and associate professors credited research and other forms of scholarly activity as the basis for their advancements. From the assistant professors appointed in 1960, Erickson claimed that 42% cited research as the basis for their advancement, and 68% those appointed in 1970 cited similar work as the basis for their advancement. When asked if they believed that departmental expectations for scholarly productivity and research had increased, 88% of the interviewees replied affirmatively.

The increasing emphasis on a reward system based primarily on research precipitated investigation into the state of undergraduate education. Recognizing that a person on the faculty of a postsecondary institution had a defined number of hours available during the course of a given week (168 hours), and that a customary work-day was 8-hours in duration (8 X 5 = 40), the query seemed to rest with how many of those 40 hours reasonably could be expected to focus on instructional practices. Alternatively, some asked whether it was reasonable to expect some parts of the remaining 128-hours to be appropriated to work on teaching and research/scholarship. Various efforts were directed toward workload formulas, and consideration for instructional practices took a

convoluted route as some courses were deemed worthy of greater time commitments and others were allocated less time. Adding to the confusion were the considerations required for clinical instruction and some disciplines that necessitated low ratios of instructors and students.

The Boyer Commission on Educating Undergraduates in the Research University (1998) reported that although research was a prominent focus for the professorate, in the majority of universities undergraduate students were not integrated into the universities' research missions. Graduate teaching assistants and part-time faculty increasingly assumed a greater portion of the undergraduate teaching load, and that translated into what oftentimes was deemed to be less than the best instructors working with students presenting the most susceptible minds. Undergraduate courses taught by senior professors often were in large lecture classes with hundreds of students, resulting in minimal to no direct contact between a student and the professor. But such large classes usually had graduate teaching assistants available for small group work. Again, it bears mentioning that the most impressionable students typically were not afforded constant and direct access to the most knowledgeable instructors, the *scholar–teacher,* and thus had little opportunity to learn to analyze and solve problems through research or inquiry. Professors viewed students as receivers of information, not active participants in the learning process. Although undergraduate education was touted as being of paramount importance, it became consequent to question the quality of teaching and student learning (Cross, 1993; Zusman, 1999).

From colonial times through the 20th century, the role of postsecondary instructional faculty evolved from tutor and mentor, to teacher and instructional

supervisor, to researcher and scholar (Finkelstein, 1997; Freeland, 1997). Toward the latter part of the 20th century the apparent lack of focus on instructional practices and importance and the accompanying emphases given to scholarly productivity led to increasing scrutiny of instructional personnel. To some extent that interest was fomented by budgetary issues but also by the revelation that students entering and completing postsecondary institutions in the United States were not competing favorably with counterparts from other nations.

Adding fuel to that fire were the concerns voiced by employers that college graduates oftentimes did not appear knowledgeable about how to work effectively in a professional context, and that many such graduates seemed deficient in basic knowledge. The confluence of budgetary concerns, employers' concerns, and the realization that students who had matriculated through the United States educational systems were less than competitive with similar students from other nations fostered scrutiny of the educational community. Commissions and panels were formed to study and possibly force a reevaluation of instructional faculty, particularly in undergraduate education (Cross, 1993; Zusman, 1999).

Emphasis on Improving Undergraduate Teaching and Learning

In 1983, the National Commission on Excellence in Education published *A Nation at Risk*. It contained a scathing review of the public education system in the United States, and its compass was international comparisons of student achievement, high student functionally illiteracy rates, and declining standardized-test scores. The sequel was to prompt investigations into all levels of education. By the late 1980s, reports from legislatures, educational associations, and special task forces repeated the concern about

the perceived declining quality of education in the nation; and the realm of higher education, particularly at the undergraduate level (Cross, 1993; Zusman, 1999), was singled out.

The concern over undergraduate education continued into the 1990s with many efforts to improve college teaching. Three major areas addressed were: “rewarding good teaching, evaluating teaching, and improving programs to help faculty become more effective teachers” (Cross, 1993, p. 289). Barr and Tagg (1995) identified an important paradigm shift in the mission of higher education as being a change from an *Instruction Paradigm* to a *Learning Paradigm*. That paradigm shift emphasized student learning as the dominant mission of undergraduate education, and focused responsibility for learning to the individual student. The intent was to give a student self-efficacy in learning; to become an active learner rather than a passive recipient. It was a dramatic change from the so-called “sage on the stage” model commonly espoused by many instructional persons, and it resulted in a considerable upheaval among the administrations of higher education institutions and their instructors. To accomplish the paradigm shift necessitated approaching the instructional process differently from a mass-lecture model.

The notion of a sage on a stage had the added dimension of a sage who facilitated cognitive interactions. Course content was the skeleton around which students were to add relevant and personally meaningful information, and the availability of the Internet served as a springboard for vastly enhancing the learning process. Furthermore, learning was seen as a collective process with persons interacting, and that activity served to reinforce or assist in the modification of existing cognition.

Adoption of the Barr and Tagg (1995) model led to encouraging instructional persons to seek innovative-teaching strategies, and concomitantly to identify procedures that yielded evidence of student learning. The latter reflected the earlier cries for proof that higher education was value added. Paradoxically, the adoption of an active-learning paradigm helped remove the burden of learning proof from the shoulders of instructors. It placed the responsibility directly on the students; where it always had been despite being obfuscated by polemics and politics. However, the pretenders to knowing how higher education should operate had yet more arrows to loose, and they included persons with a less than favorable preparation for undertaking higher education; persons for whom English was not the primary language, and persons considered to belong to a special category.

State of Teaching and Learning in 2-Year Colleges

Although the emphasis of 2-year community and technical institutions always had been teaching, the avowed concern for demonstrating effective teaching and learning did not bypass those institutions. The open-door mission with its commitment to teaching a diverse student body distinguished community and technical colleges from other postsecondary academic institutions. Rifkin (2000, p. 1) framed community colleges by saying, “The hallmark of faculty members … is a commitment to teaching all students, particularly nontraditional students and those who might not otherwise have access to higher education.” Even with the specialized needs of a diverse student population, the traditional methods of teaching still dominate the 2-year college curriculum (Cohen & Brawer, 2003).

The responsibility for successful student learning ostensibly has been the role of the instructional faculty; however, most such persons working in community/technical colleges have no training in adult-learning theory or in pedagogical methods suited for the diverse community-college student body (O'Banion, 1994; Rifkin, 2000). Boice (1992) cautioned that such new instructors often were unprepared as teachers, and reported, "New faculty badly in need of help, badly in peril of establishing poor habits of teaching that will persist" (p. 52). Ironically, the numbers of new, inexperienced faculty likely will continue to increase as instructors are hired to replace retiring faculty and as student enrollment increases (J. Murray, 1999).

With the influx of new and often untrained instructional faculty persons being juxtaposed to a highly diverse and increasing number of students, it is incumbent on postsecondary institutions to understand and promulgate what influences faculty members to incorporate innovative, learner-centered teaching strategies into their teaching. The idea of all instructional personnel becoming aware of how to foster self-efficacy among students is of paramount importance. Students need to assume the responsibility for their own learning and as that happens there will be evidence of learning. Thus, both dimensions of the higher education conundrum will be addressed: evidence of student learning and increased numbers of highly qualified persons entering the labor force.

Context of the Problem

Instructors are pivotal in providing effective learning experiences for students, especially nontraditional students, but little if any teaching support is given to most new community/technical college faculty. Too often instructors are thrust into teaching

positions on the face validity of their credentials and perhaps one contrived instructional demonstration. Staff-development opportunities, a common type of support, generally do not result in a permanent change in teaching methods because such activities tend to happen only once and most attendees do not absorb the information (Murray, 1999).

Grubb (1999) reported that many 2-year college instructors claimed to have a sense of being isolated and on their own to figure out how to teach. Most entered the postsecondary instructional profession with inadequate pedagogical training and many received little or no support to improve their teaching. Furthermore, there has been a deprecating attitude toward community-college instructors, analogizing them to high school teachers without credentials. The consequence has been to place them at risk as effective teachers because they lack the instructional theories and practices and, of greater importance, the guidance for working as professional educators who need to address a myriad of issues beyond course content.

> The question we raise persistently is whether there is anything—in their preparation for teaching, in their networks of peers, in mentoring early in their teaching careers, in staff development, in the culture of the institution that sponsors their teaching—that would give them that control, enable them to improve their teaching. All too often … there is nothing to help them. (Grubb, 1999, p. 95)

As a result, most community/technical-college instructors fall back to the practices they observed during their educational preparation, and “by default, much college teaching is done by the lecture method, while at the same time faculty desire to teach students to

think effectively—a process more easily achieved through active learning techniques" (Stark & Lattuca, 1997, p. 14).

Faculty instructional practices can influence student academic success. Diversity in student populations oftentimes brings different values, expectations, manners of interaction, backgrounds, and perhaps learning styles into conflict. In such contexts, students are fragile. Instructors, whether they acknowledge the fact or not, have the potential to be powerful influences. What they do and how it is done can help or hinder student success. Consequently, it is important to understand how factors such as pedagogical training and departmental affiliation influence faculty choice of teaching methods, and their proclivity to employ innovative approaches in the pursuit of enhancing student self-efficacy and learning.

Researchers have reported a difference in pedagogical choices and variations in goals and strategies in teaching and learning among faculty with different disciplinary associations (Eljamal, Sharp, Stark, Arnold, & Lowther, 1998; Stark & Morstain, 1978). Lueddeke (2003) described a significant difference between faculty discipline and the type of teaching concept held, either teaching focused or student focused. Lueddeke also reported that instructors possessing teaching credentials were more receptive to innovative curriculum approaches.

Separate studies of faculty members in the Washington State Community and Technical College System and The Ohio State Community College System revealed that faculty persons associated with different departments varied appreciably in their selection of course goals and objectives (Dempsey, 2006; Portmann & Stick, 2003). The significance of those studies rests with the fact instructors become inculcated with values

and expectations shared by others in a discipline community; values that influence their curricular choices and instructional practices.

Little research has been done on the influence of pedagogical training on faculty members' choice of innovative, and/or active-learning teaching techniques, and Grubb (1999) pointed to the notable lack of empirical studies about community/technical college teaching. More research is needed on the influence of pedagogical training on faculty pedagogical choices, especially in 2-year colleges where the diversity of the student body necessitates knowledge of effective teaching and learning strategies.

The present study involved the full-time faculty of the colleges of the Technical College System of Georgia. During 2007, the technical college system served 140,852 students in credit courses and employed 2,193 full-time faculty members (personal communication, S. Kinney, September 9, 2008).The state of Georgia had two governing bodies for higher education institutions. The Board of Regents of the University System of Georgia "oversees 35 colleges and universities: four research universities, two regional universities, 13 state universities, seven state colleges, and nine 2-year colleges" (http://www.usg.edu/regents). "The Technical College System of Georgia is a unified system of technical education, custom business and industry training and adult education" (Technical College System of Georgia, 2008).

The academic credentials for faculty members varied depending on the academic level of the courses taught. Faculty academic credentials for teaching associate-degree level courses was a doctoral or master's degree in the teaching discipline or a master's degree in a related discipline, with a concentration in the teaching discipline (a minimum of 18 graduate semester hours/30 graduate quarter hours in the teaching discipline).

Credentials for faculty teaching courses not designed for transfer to the baccalaureate degree required a bachelor's or associate degree in the teaching discipline and demonstrated competence/experience in the teaching discipline. The academic credentials for faculty teaching nondegree, diploma occupational courses was a diploma in the teaching discipline and licensure/certification in a field (if applicable), with an emphasis on competence gained through work experience. Faculty teaching nondegree certificate-level courses required a certificate in the teaching discipline and licensure/certification in field (if applicable) with an emphasis on competence gained through work experience (West Central Technical College, 2008).

Statement of the Problem

Several studies have established the influence of departmental affiliation in faculty selection, expression, understanding, and interpretation of student goals (Eljamal et al., 1998; Eljamal, Stark, Arnold, & Sharp, 1999; Fox, 1997; Smart & Ethington, 1995). Additional research established the impact of discipline on course planning and curricula development (Dempsey, 2006; Lattuca & Stark, 1994; Portmann & Stick, 2003; Stark & Morstain, 1978). Although these studies demonstrated the influence of disciplinary affiliation in course planning and course goals, none of them approached the influence of discipline on faculty selection of innovative-teaching practices.

Research on the relationship of academic discipline and instructors' approach to teaching or teaching behavior have established evidence of the influence of discipline; however most of those studies were conducted at 4-year institutions outside of the United States (Lindblom-Ylanne, Trigwell, Nevgi, & Ashwin, 2006; H. Murray & Renaud, 1995; Norton, Richardson, Hartley, Newstead, & Mayes, 2005; Trigwell & Prosser,

2004) . While all of those studies had a similar theme, the methodology and source of the data collected for the research widely varied.

Matney's (2001) research was the only study that incorporated the survey instrument used in the present study, but that work only delineated between two disciplinary groups and the study had a low response rate. Research on the influence of pedagogical training on faculty selection of innovation was less abundant than research on disciplinary influence. Although the studies had a similar theme, each investigated a different type of pedagogical training and the results were varied (Gibbs & Coffey, 2004; Norton et al., 2005; Postareff, Lindblom-Ylanne, & Nevgi, 2007).

Teaching and learning is the primary mission of 2-year colleges, yet there is no known research about the faculty of Georgia's technical colleges regarding the extent of faculty implementation of innovative or active-learning teaching techniques, and factors influencing the instructional personnel to use these methods of instruction. Furthermore, there is no research on the influence of faculty discipline or department affiliation on teaching practices (personal communication, S. Kinney, September 9, 2008).

The present study addressed the void in the research related to factors that influence the pedagogical choices of the faculty of Georgia technical colleges. It sought to determine if there was a correlation between faculty choice of innovative pedagogical techniques and learning strategies with department affiliation and pedagogical training.

Purpose of the Study

This quantitative study examined the influence of faculty department affiliation and pedagogical training on the adoption of innovative pedagogical practices by instructors in the Technical College System of Georgia. The independent variables were

the levels or amount of formal pedagogical training and departmental affiliation. The dependent variables were innovative pedagogical activities and practices employed by respective members of the faculties involved. The three innovative-teaching practices researched in this study were participation in the scholarship of teaching and learning, active-learning practices, and frequency of introduction of new teaching practices. The evaluation of participation in those areas of innovative pedagogical practices was determined by scores on the Faculty Survey on Teaching Practices. That survey was derived from a modification of the Faculty Survey on Teaching, Learning and Assessment (FSTLA), developed by the research program on Academic Programs and Students for the National Center for Postsecondary Improvement (NCPI; 2000).

Research Questions

The central question of this study was, Does technical college departmental affiliation and personal pedagogical training/education influence a faculty person's use of innovative-teaching and -learning practices? That issue was refined into the following seven research questions.

1. Does departmental affiliation influence faculty members' adoption of active-learning practices as indicated by scores on the Faculty Survey on Teaching Practices?
2. Does pedagogical training influence faculty members' adoption of active-learning practices as indicated by scores on the Faculty Survey on Teaching Practices?

3. Does a faculty person's departmental affiliation influence their involvement in activities related to activities on the scholarship of teaching and learning scores on the Faculty Survey on Teaching Practices?
4. Does a faculty person's pedagogical training influence their involvement in activities related to activities on the scholarship of teaching and learning scores on the Faculty Survey on Teaching Practices?
5. How do faculty members evaluate their department's support of faculty implementing innovative-teaching practices?
6. How frequently do faculty members introduce new active-learning teaching methods?
7. How do instructional faculty members learn to use new teaching, learning, or assessment techniques?

Hypotheses

The first four research questions were refined into the following hypotheses:

H_o 1: No statistically significant differences exist in the use of active-learning practices among faculty members from different departments.

H_1 1: There are statistically significant differences in the use of active-leaning practices among faculty members from different departments.

H_o 2: No statistically significant differences exist in the use of active-learning practices among faculty members with different levels of pedagogical training.

H_1 2: There are statistically significant differences in the use of active-learning practices among faculty members with different levels of pedagogical training.

H_o 3: No statistically significant differences exist in faculty involvement in activities related to the scholarship of teaching and learning as a consequence of a participant's departmental affiliation.

H_1 3: There are statistically significant differences in faculty involvement in activities related to the scholarship of teaching and learning as a consequence of a participant's departmental affiliation.

H_o 4: No statistically significant differences exist in faculty involvement in activities related to the scholarship of teaching and learning among faculty members with different levels of pedagogical training.

H_1 4: There are statistically significant differences in faculty involvement in activities related to the scholarship of teaching and learning among faculty members with different levels of pedagogical training.

Significance of the Study

Identifying factors influencing faculty teaching choices is important because such knowledge can and should help instructors and administrators better understand the pedagogical choices instructors make. In addition, such information can be valuable when seeking to determine the effect of faculty pedagogical choices on student learning. Also, the results from this research might be meaningful for institutional administrators as they consider allocating resources for in-service training for instructional personnel, and the sharing of the findings could be influential in determining future directions of community-college instructional practices.

Information from this study is expected to have relevance for designing more effective faculty-development activities in the areas of instructional practices and student

learning and tailoring faculty-development programs to the specific needs of each department. Additionally, the findings are expected to have value for new faculty orientation practices, especially in the areas of developing and implementing pedagogical techniques that encourage more meaningful student learning. The outcomes, understanding discipline influences and receptivity to alternative pedagogical practices, also should have implications for issues of accountability in student learning.

Definition of Terms

The following definitions were provided to ensure uniformity and understanding throughout the study.

Active-learning practices. Learning strategies providing opportunities for students to talk and listen, read, write, and reflect as they approach course content through problem-solving exercises, informal small groups, simulations, case studies, role playing, and other activities—all of which require students to apply what they are learning (Myers & Jones, 1993, p. xi).

Departmental affiliation. The department in which the instructor is presently serving. The departments customarily found in Georgia technical colleges determined the departmental affiliations. For the purpose of this study, they were grouped into six categories as follows: English and social sciences (including speech, humanities, psychology, and sociology), science and mathematics, business and computer sciences, allied health and nursing, vocational/industrial and technical, and adult literacy/adult basic education.

Innovative teaching practices/techniques. Nontraditional (not totally lecture) teaching practices that purport to improve undergraduate teaching and learning. Two

areas of innovation studied in this report were active-learning practices and the participation in the scholarship of teaching and learning.

Pedagogical training/education. Receiving instruction in effective teaching and learning techniques and strategies. This includes college-credit courses in pedagogy and staff-development classes, workshops, and programs.

Scholarship of teaching and learning. Research into pedagogy, applied classroom research, implementation, and evaluation of new teaching and learning techniques, and assisting and evaluating faculty peers in their use of new teaching and learning practices.

Technical College System of Georgia. The 33 technical colleges in the Technical College System of Georgia (2008). It does not include 2-year colleges in the Georgia Board of Regents system. The technical colleges in the Technical College System of Georgia offer a variety of associate degrees, diploma programs, continuing education, and economic-development programs.

Delimitations

This study was limited to full-time faculty in the 33 technical colleges of Georgia during the Winter Quarter of 2009 (2,193 faculty members). The results should be viewed cautiously because the information may not be applicable to other 2-year or 4-year postsecondary institutions, or to other state systems.

Data concerning the faculty adoption of innovative-teaching practices was limited to faculty responses to specific questions on the survey instrument. It did not include other sources such as classroom observations, student observations, or assessment of student learning.

Limitations

Survey research was the only method for data collection. The number of returned and completed surveys was limited to respective faculty members' willingness to participate. The survey was distributed by e-mail through the Technical College System of Georgia's Academic Affairs e-mail service, and there was a possibility that new faculty members might not have been added to the service. In addition, technical difficulties might have negated receipt of the information by some faculty members.

The survey is a web-based survey; therefore there exists the possibility of technical difficulties occurring in the processes of executing the survey and in collection of data. The survey did not account for participants misunderstanding questions or giving inaccurate information. As mentioned above under Delimitations, all findings should be viewed with caution because they cannot be generalized patently to other institutions or other states.

Assumptions

An assumption addresses limitations of which the researcher is aware that may affect the study, but which the researcher will not attempt to control. The study assumed respondents were truthful and candid in their responses.

Summary

The role of the faculty in the United States has passed through several metamorphoses since the founding of colonial colleges in the 1600s. Most faculty members were transient tutors responsible for developing students' character and leadership qualities. Their duties involved tutoring and mentoring students. By the 1800s the establishment of the professorate instigated the charge of teaching a specific

discipline. Both tutors and professors continued the responsibility of building students' character; however, the professors' responsibilities became most keenly focused on teaching the discipline (Boyer, 1990; Finkelstein, 1997).

During the late 19th century, the introduction of the research-oriented Germanic university model initiated a shift in the responsibilities of the professorate toward research. The research model expanded in the 20th century as funding resources, most notably from the state and federal governments, increased dramatically in the 1950s, 1960s and 1970s. (Boyer, 1990; Boyer Commission, 1998; Freeland, 1997; Geiger, 1999).

As a consequence of the release of the report, *A Nation at Risk* (1983), critical attention focused on the status of undergraduate teaching (Boyer, 1990, 1996; Cross, 1990, 1993; Cross & Steadman, 1996). Barr and Tagg (1995) were among those who espoused the need for improved undergraduate education through a focus on excellence in teaching and student learning—to make students active in their learning processes.

To advance student learning, instructors were encouraged to use innovative-teaching techniques, especially those that actively involved students in the learning process (Barr & Tagg, 1995; Cross 1990, 1993; Cross & Steadman, 1996;). As encouragement to improve undergraduate education continued to prominence, it has become increasingly important to identify and understand the factors that might influence faculty pedagogical teaching choices. This study addressed that lacuna: the influence of disciplinary affiliation and pedagogical training on faculty pedagogical choices. Chapter 2 presents a review of selected and relevant literature on events and factors that presumably have influenced faculty pedagogical and curricula decision making.

CHAPTER 2

LITERATURE REVIEW

Introduction

This review of literature is directed by the overarching research question, Does technical college departmental affiliation and personal pedagogical training/education influence a faculty person's use of innovative-teaching and -learning practices? There are six major sections and each contains identified subsections. The first section presents the theoretical framework for the study. The second section describes the research instrument. Next, there are reviews of available literature on the influences of disciplinary affiliation (third section) and the influences of pedagogical training on instructional faculty teaching activities (fourth section). The fifth section reports literature on faculty incorporation of active learning practices in the classroom. The final section ties together the preceding information to reinforce the significance of the scholarship of teaching and learning, particularly at the 2-year college level.

Theoretical Framework

Stark and Lattuca's (1997) "contextual filters model of course planning" served as the theoretical framework for this research. The model was composed of three areas: content (key factors in course planning), context (influences on course planning), and form (the final course plan).The teachers' final decisions about the course plan, as exemplified by the "contextual filters model," were determined by filtering the content factors through the various contextual influences. "The title 'contextual filters model' was chosen to convey that teachers' disciplinary views and related assumptions [content]

are stable antecedents to course planning, largely independent of context" (Stark, 2002, p. 142).

The content area of the model was the key factor in the course-planning model. It included faculty background and characteristics, faculty views of their academic views, and purposes of education espoused by faculty. The context area included student and institutional considerations, and knowledge of pedagogy. The final course plan was represented by the form area of the model. It defined the decisions about goals and learning strategies and the arrangement or order of course content. Stark and Lattuca (1997) contended that persons engaged in the practice of teaching applied these three areas sequentially when planning courses, but could revisit one or more areas as a consequence of feedback to make course adjustments. The degree of influence of the content and contextual filters could vary greatly for an individual instructor and across instructors, even those in similar situations or locations. Figure 2.1 illustrates the interaction(s) among content, context, and form.

The broad all encompassing "contextual filters model" of Stark and Lattuca (1997) was beyond the scope of this study. Therefore, this study focused on specific areas of the model that were pertinent to the purpose of this research: to learn the influences of disciplinary/department affiliation and pedagogical training on faculty members' choices of innovative-teaching strategies. The components of the model investigated in this study were the influence of faculty background in pedagogical training and how respective faculty viewed their discipline, shown in the Content and Background Considerations section of the model. Pedagogical knowledge was a contextual filter and

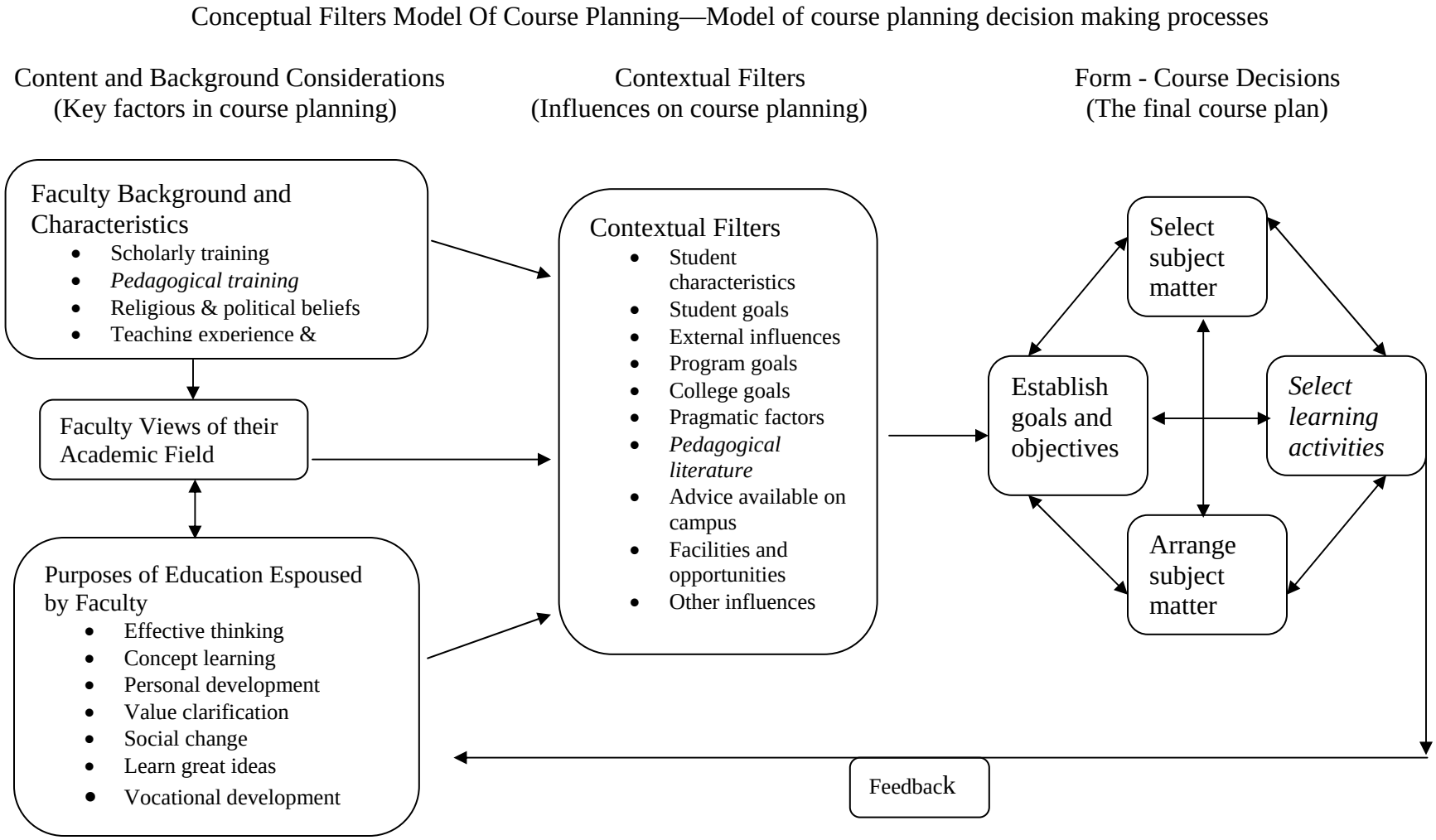

Figure 2.1. The contextual filters model of course planning. (Italics indicates areas applicable to this study).
Note: From "Planning Introductory College Courses," by J. S. Stark, 2002 in N. Hativa & P. Goodyear (Eds.), *Teacher Thinking, Beliefs and Knowledge in Higher Education.* Dordrecht, The Netherlands: Kluwer Academic, p. 144.

the decisions to select innovative-teaching strategies were the form-course decision (selected learning activities) of the model. The areas of the model applicable to this study are indicated in italics in Figure 2.1.

An instructors' decision-making process, defined by the model, would include the influence of the instructor's view of their discipline on the content of the teaching and learning strategy. This conception would be "filtered" or refined by their pedagogical knowledge before the final decision of selecting a specific teaching/learning strategy.

Survey Instrument

The survey used in this study was adapted from the FSTLA developed by Dey and Hurtado (2000), project directors and principal investigators for the NCPI. The NCPI is a research center of the National Postsecondary Institute, U.S. Department of Education. Their project was one of six projects conducted by the federally sponsored NCPI. Project 5 was a multilevel project conducted by research teams from the University of Michigan. The research team of Dey and Hurtado developed the FSTLA for Project 5.3, which "focused on activity at the academic program level as it relates to the improvement of teaching and learning and the role of student assessment" (NCPI, 2000).

Dey and Hurtado (2000) developed the survey using a pilot study and interviews of faculty, students, and academic administrators at three Midwestern, Research I institutions. The institutions in the pilot study were identified as having high levels of innovative-teaching activity. Faculty members from seven institutions were selected to participate in the final survey, and represented a diverse range of institutional types: public and private, community colleges, 4-year colleges, and universities. The

instructional personnel represented the disciplines of mathematics, English, chemistry, and psychology. The results of the survey were published on the NCPI website.

Matney (2001) used the survey in a dissertation to "determine what institutional and departmental factors are likely to influence faculty in innovation and improvement of undergraduate teaching and learning practices" (p. 48). Matney's findings are reviewed in the Departmental/Disciplinary Affiliation Influences on Faculty section of this dissertation.

The present study investigated faculty participation in three areas of innovative-teaching practices: introduction of new teaching practices, use of specific active learning practices and participation in various teaching, and learning and assessment activities (designated as leading the scholarship of teaching and learning). These areas of innovative-teaching practices were established by Matney (2001) in a dissertation based on the Research Project 5.3 led by Dey and Hurtado (2000).

Departmental/Disciplinary Culture

Discipline-based professorial assignments appeared in higher education in the United States as early as the 1830s. They were largely shaped by the classics and included divinity, philosophy, and ancient languages (Finkelstein, 1997) By the early 20th century with the introduction of the sciences, natural history, and technology, the classical curriculum began to give way to the modern curriculum. Newly established universities including Cornell (1869), Johns Hopkins (1876), Chicago (1890) and Stanford (1891) brought profound changes that transformed established institutions into modern universities. The two most prominent changes involved the "emergence of discrete scholarly disciplines and the development of an academic profession" (Gruber,

1997). Disciplinary specialists were trained in the new graduate schools and new professional associations were established on the national scale (Gruber).

Disciplinary specialization is the foundation for departmental structure in higher education, and respective disciplines are defined by their infrastructure and cultural or social qualities (Lattuca, 2001). This section reviews relevant research on the culture and characteristics of academic disciplines/department.

Biglan (1973a, 1973b) categorized the subject matter of academic disciplines into three dimensions based on a discipline's cultural and epistemological differences. Such dimensions described a disciplines' paradigm as hard or soft, the level of application as pure versus applied, and concern with life as life system or nonlife system.

Biglan (1973a, 1073b) based these categories on analysis of multidimensional scaling of faculty members' (scholars) judgments on similarities among academic areas. Participants in the study were 68 faculty members at the University of Illinois, a large state-supported university. The scaling was replicated at a small, private Washington state liberal arts college with 56 faculty members participating. Biglan purposely chose two very different institutions to ensure the results generalized to academic areas at a broad range of colleges.

Biglan (1973a, 1973b) selected 36 academic areas to measure a diverse and representative sample. Participant scholars grouped the areas based on perceived similarities in the subject matter of each academic area. The faculty members at the liberal arts college rated each group as one of the following: pure–applied, physical–nonphysical, biological–nonbiological, of interest to me–of little interest to me, traditional–nontraditional, and life science–nonlife science. After applying

multidimensional scaling, the scholars at the participating postsecondary institutions identified three–dimensional characteristics of academic subject matter: hard–soft, pure–applied, and life–nonlife systems.

Hard disciplines included engineering, natural sciences, and agriculture. *Soft* areas included education, social sciences, and humanities. Disciplines judged as applicable to practical problems—education, engineering, and agriculture—were distinguished from the "pure" disciplines of humanities, social sciences, and hard sciences. Disciplines that dealt with inanimate objects (nonlife systems) were differentiated from those that were concerned with social areas and biology (life systems).

Biglan (1973a, 1973b) also analyzed the social structure and scholarly output of professors in Ph.D.-granting departments at the University of Illinois. The researcher selected that institution because of its commitment to research and graduate education, and its large and varied curricula. Participants were department heads and faculty from 47 departments. The response rates from all the departments averaged 55%. Data sources were surveys, archival records, and interviews with graduate-department chairs and faculty members. The purpose was to collect data about the characteristics of the graduate programs in two areas: social connectedness and commitment preferences.

The data were analyzed using a three-way analysis of variance (ANOVA) based on the three categories established in his previous work (hard–soft; pure–applied; life–nonlife). The results were interpreted to mean that notable differences existed in several areas of social connectedness and commitment among the departments and in different categories. The hard disciplines scored markedly higher than did the soft disciplines in

one social-connectedness measure of teaching (greater collaboration with fellow faculty members) and three social connectedness measures of research (work with significantly more people on research, more sources of influence on their research goals, greater number of coauthors; Biglan,1973b). Pure and applied disciplines differed notably on one measure of teaching connectedness. Professors in applied disciplines preferred working with more people in teaching than did those in the pure disciplines. In the area of research connectedness, applied disciplines differed significantly in two measures. Faculty preferred to work with more people in research and used more sources of influence on their research. The life–nonlife clusters were found to differ appreciably on one area of research connectedness (*Life* scholars had more sources of influence in their research). The life–nonlife dichotomy also differed significantly in two measures of commitment to teaching. Professors in nonlife areas reported they enjoyed teaching more and spent more time teaching than their colleagues in the life areas (Biglan, 1973b).

Biglan (1973a, 1973b) concluded that “the existence of an agreed upon paradigm in an area provides a structured framework that appears to encourage certain forms of organization” (p. 213). Biglan’s research laid the groundwork for subsequent researchers exploring the three dimensional clusters (hard–soft; pure–applied; life–nonlife) of academic areas and their influences on the social connectedness and commitment of respective faculty constellations.

Kolb (1981) identified two dimensions of college majors; active–reflective and abstract–concrete. He studied the Learning Style Inventory scores of 800 practicing managers and graduate students in management. The clustering of the learning-style scores showed variations associated with undergraduate college major, and corresponded

favorably with the patterns of relationships associated with Biglan's (1973a, 1973b) categories. Biglan's hard–soft category aligned with Kolb's abstract–concrete cluster and his applied–pure with Kolb's active–reflective.

Kolb (1981) continued his study of disciplinary differences by examining data from the Carnegie Commission Report on Higher Education of 1969, collected from more than 32,000 graduate students and 60,000 faculty members. The analysis allowed Kolb to claim there were differences in inquiry methods and how knowledge was reported when evaluated across the dimensions. Those results were consistent with previous research by Kolb and Biglan (1973a, 1973b), and was promoted to have provided additional support to Biglan's typology of academic disciplines. Kolb summarized the importance of the findings as,

> The purpose of this analysis is not to pigeonhole fields but to identify useful dimensions for describing variations in individual learning styles and in the inquiry process of different disciplines, in order to better understand and manage the educational process. (Kolb, 1981, p. 245)

Becher (1987) adopted the merged Biglan–Kolb categories of academic disciplines to investigate the culture of academic disciplines. Becher postulated that each disciplinary category had its own distinct culture with characteristic epistemology, specialized language, literature, traditions, practices, and beliefs. The author identified unique educational values, teaching orientations, socialization, and communication in each group. Table 2.1 presents descriptions of those disciplinary categories.

Table 2.1
Knowledge and Culture by Disciplinary Groupings

Disciplinary groupings	Nature of knowledge	Nature of disciplinary culture
Pure sciences (e.g. physics) hard–pure	Cumulative; atomistic (crystalline/treelike) concerned with universals, quantities, simplification; resulting in discovery/explanation	Competitive, gregarious; politically well-organized; high publication rate; task oriented
Humanities (e.g., history) and pure social sciences (e.g., anthropology) soft–pure	Reiterative; holistic (organic/riverlike); concerned with particulars, qualities, complication; resulting in understanding/interpretation	Individualistic, pluralist; loosely structured; low publication rate; person oriented
Technologies (e.g., mechanical engineering) hard–applied	Purposive; pragmatic (know-how via hard knowledge); resulting in products/techniques	Entrepreneurial, cosmopolitan; dominated by professional values; patents substitutable for publications; role oriented
Applied social sciences (e.g., education) soft–applied	Functional; utilitarian (know-how via soft knowledge); concerned with enhancement of [semi-] professional practice; resulting in protocols/procedures	Outward-looking; uncertain in stature; dominated by intellectual fashions; publication rates reduced by consultancies; power oriented.

Note. From "The Disciplinary Shaping of the Profession," by T. Becher, 1987 in B. R. Clark (Ed.), *The Academic Profession: National, Disciplinary, and Institutional Settings.* Berkeley: University of California Press, p. 289.

Becher (1989) described academic disciplines as resembling tribes displaying traditions in the form of cultures and subcultures having their own characteristics, organizations, communication, and epistemology. Becher defined these cultural elements as including "their traditions, customs and practices, transmitted knowledge, beliefs, morals and rules of conduct, as well as their linguistics and symbolic forms of communication and the meanings they share" (p. 24).

Becher (1994) also examined the impact and influence of discipline on higher education research and policy at the macro or international level, the meso or institutional level, and micro or departmental level. Subsequently it was proposed that researchers investigate the significance of disciplinary practice and culture at each level as well as the

interrelationships between levels. Becher asserted, “If more researchers were to take a disciplinary perspective fully into account, one could see the scope for better cross-fertilisation and a better sense of unity between them” (p. 160).

Biglan (1973a, 1973b), Kolb (1981), and Becher (1987, 1989, 1994) agreed on the notion that discipline typology could be identified based on the distinctive cultures and epistemology exemplified in each category. They further agreed on the significance of those distinctions as they applied to research in higher education. Most of their research focused on the university level, primarily at research universities. Barr and Rossett’s (1994) and Cohen and Brawer’s (2003) descriptions of the culture of department/disciplines in community colleges contrasted starkly with the cultural influence of the disciplines identified by Becher (1981) in universities and colleges.

These latter authors (Barr & Rossett, 1994; Cohen & Brawer, 2003) declared that community colleges exhibited a dichotomy of instructional frameworks between liberal arts and vocational education. Adding to that difference, Cohen and Brawer contended that the influence of a disciplinary field was practically lost in the liberal arts sector of 2-year colleges. In that environment the courses and curricular designs were much more influenced by textbook content and what interested learners than disciplinary interests. When it came to designing curricula, Cohen and Bower found the 2-year college faculty was influenced more by the needs of their students and covering the content in the text than by the latest trends and advances of their discipline.

Departmental/Disciplinary Affiliation Influences on Faculty

Kolb (1981) and Becher (1994) recommended considering the perspective of disciplines when investigating the educational process in instructional activities and

expectations from students. Relevant literature revealed that available material focused on the influence of departmental/disciplinary affiliation and its affect on the work of higher education faculty: instructional goals, planning and curricular development, teaching approaches/practice, and student outcomes.

Instructional Goals

The relationships between discipline and faculty goals were studied by Eljamal et al. (1998) and Eljamal et al. (1999). They reported that faculties' expression, understanding, and interpretation of goals was based on their respective disciplinary association. The authors analyzed 5,415 goals that faculty persons identified as goals they set for students. The authors collected data from two previous studies: interviews conducted with 69 faculties from six colleges (Stark et al., 1988) and from responses to an open-ended survey question on course planning (Stark et al., 1990) from more than 2,100 general-education faculty members associated with more than 300 colleges.

The authors (Eljamal et al., 1998) extracted course-planning goal statements from 90-minute interview sessions with respective faculty persons, and also sought information about their primary course goals for students. The second study (Eljamal et al., 1999) presented a survey question asking participating faculty to state two course goals they believed were important to convey to students. The researchers classified the goals elicited from the faculty interviews and the survey question into categories based on relevant literature. They then examined the transcripts to identify the goals from nine disciplines for differences in type of goals mentioned, expression of those goals, and vocabulary used to describe the goals. They selected disciplines that focused on common general-education classes.

Next, the researchers (Eljamal et al., 1998) divided the goals into seven major goal categories: knowledge acquisition, intellectual development, effective thinking, general skill development, personal development, future preparation, and instructional process goals. Goal categories were culled from previously reported literature, but the researchers also made modifications to categories predicated on the data they had. The goal categories of knowledge acquisition and general skill development had been widely described across disciplines and comprised 37% and 21% respectively of the total number of goals. Together they included goals related to gaining content information and developing basic skills such as reading, writing, and calculating. The goal of effective thinking emerged only 15% of the time. It was delineated into eight subcategories: problem solving, critical/analytical thinking, logical/deductive reasoning, logical/inductive reasoning, classification, analogical thinking, synthetic thinking, and creative thinking.

Eljamal et al. (1998) reported apparent discrepancies among the disciplines in their descriptions of the eight subcategory goals; persons used the same terminology but conveyed differences in their intents, and used different terms to designate the same concept. For example, the terms critical/analytical thinking were prominent among most disciplines, however the nuances of the meanings of those terms varied across the disciplines. The humanities faculty interpreted critical/analytical thinking as the ability to judge a work and recognize its strengths and weakness. The mathematics and social sciences faculty linked critical thinking to the evaluation and interpretation of data and information to distinguish fact from erroneous information. Although the concept of *problem solving* was emphasized across the disciplines, it was seldom referred to as such

except in mathematics. Those faculty persons used the term problem solving when describing specific applications and techniques. Other disciplinary faculty members rarely included examples or explanations of problem solving. Rather, they only mentioned that it was important for addressing societal problems or that it was an important skill for students to apply in their personal lives.

Eljamal et al. (1999) reported findings from the same data set for another major goal, intellectual development. Faculty members mentioned the goal of intellectual development only about half as often as the goal of effective thinking, and the interpretation was that it had a lower priority for those instructional personnel. Persons who taught in the literature and arts areas mentioned the goal, intellectual development most often, and instructors in foreign language and mathematics mentioned it least often. Intellectual development subsequently was divided into six subcategories for further analysis.

The researchers, Eljamal et al. (1999) interpreted the results as meaning that faculty members from different disciplines varied in the emphases they placed on the different subcategories of intellectual development. For example, social science and science faculty stressed relating their respective discipline to students' lives, while composition instructors emphasized encouraging independent thinking as a major goal of intellectual development. The authors also reported that disciplines differed in the phrasing, degree of emphasis, and in reflection of goals in the subcategories. Faculty members in the humanities placed strong emphasis on the subcategory, appreciate contributions of the discipline to humanity, where as the mathematics and science faculty seldom mentioned it as a goal of intellectual development.

The results of those studies (Eljamal et al., 1998; Eljamal et al., 1999) were consistent with Becher's (1989) contention that disciplines exhibited their culture with distinctive communication. Eljamal et al. claimed their findings supported the importance of considering instructional faculty disciplinary affiliation when interpreting goals faculty set for students. The implication was that such differences translated into student outcomes, and what oftentimes was identified when engaging in accountability exercises. Unfortunately, it seems that those engaged in accountability activities frequently failed to realize that inputs to the measurement efforts are not always consistent, while outputs (student performances) are likely have different values according to disciplines; competencies are not the same for all students who complete programs of study because their disciplines expect different skills.

Smart and Ethington (1995) studied the responses of selected undergraduate faculty respondents to the 1989 Carnegie Foundation Faculty Survey. They reviewed their indicated instructional goals for undergraduate education to determine the importance of faculty discipline affiliation on student outcome goals. The 4,072 persons responding represented higher education institutes from each of the four Carnegie instructional classifications, and were categorized using Biglan's (1973a) typology of academic disciplines: hard or soft, pure or applied, and life or nonlife. The survey posed questions designed to classify undergraduate-student outcome goals into three goal factors: knowledge acquisition, knowledge application, and knowledge integration.

Smart and Ethington (1995) compared three goal factors across Biglan's (1973a) disciplinary groups and institution types through a multivariate ANOVA. Additional statistical tests (ANOVA and Tukey honest significance test) were preformed when a

multivariate test proved significant. The multivariate tests results were viewed to mean that there were statistically significant differences between the hard nonlife (chemistry, mathematics, and physics) and soft nonlife (English language and literature) disciplines in two of the three goal factors: knowledge acquisition and knowledge integration. In the soft nonlife disciplines the instructional personnel placed greater importance on knowledge acquisition and knowledge integration.

The study data also allowed the researchers (Smart & Ethinton, 1995) to say that persons working as instructors in the pure disciplines (physical science, mathematics, social sciences, languages, history, and philosophy) placed more emphasis on knowledge acquisition and integration in contrast to applied disciplines (accounting, finance, engineering, and education). No statistically significant differences were uncovered in the three goal factors (knowledge acquisition, knowledge application, and knowledge integration) for faculties engaged in the life versus nonlife disciplinary classifications. Life areas include courses concerned with the study of living systems including the study of humans (agriculture, biology, social science, and education). Nonlife courses do not involve living systems (physical sciences, mathematics, languages, history, political science, and engineering).

Thus, the research of Eljamal et al. (1998), (Eljamal et al. (1999), and Smart, and Ethington (1995) revealed that persons from different academic disciplines likely had different goals deemed most important for their respective students. Also of importance was that those instructional faculty persons apparently interpreted and expressed the same goals differently. It was that latter point that fueled the controversy related to accountability for student learning. It seemed that those involved with the process of

demonstrating student learning possibly were dealing with vocabulary, definitions, concepts, and interpretations that were not synonymous. It was tantamount to playing poker but with a dealer using a different deck of cards than the players.

Fox (1997) administered the Teaching Goals Inventory (Angelo & Cross, 1993) to 364 faculty persons from three public universities in North Carolina dedicated to undergraduate education. The Teaching Goals Inventory categorized faculty goals for students into six clusters: higher order thinking skills, basic academic success skills, discipline-specific knowledge and skills, liberal arts and academic values, work and career preparation, and personal development. Faculty members evaluated those teaching goals in light of two academic cultures—the instructional paradigm and the learning paradigm. Fox interviewed 12 participants to secure clarification and explanation of their responses, and used that information to study the disciplinary influence on faculty teaching goals. The four broad discipline categories used were humanities, social sciences, natural sciences, and professional and applied sciences.

Fox (1997) used an ANOVA to evaluate the relation between discipline and teaching goals, and found a statistically significant relationship between discipline and the teaching goals, liberal arts and academic values, work and career preparation, and personal development. Responses to the interview questions revealed that respective faculty members considered the influence of their discipline to be a major contributing factor in their selection of teaching goals.

Planning and Curricula Development

Stark and Morstain (1978), Lattuca and Stark (1994), Portmann and Stick (2003), and Dempsey (2006) researched the influence of faculty disciplinary affiliation on the

curricula-design process. In a study of 396 faculty members of six liberal arts colleges, Stark and Morstain examined liberal arts faculty to determine if their views about educational and curricular issues were similar or if they varied along disciplinary affiliations. The disciplinary clusters for that study were humanities, social sciences, natural sciences, and professional/applied fields. The authors used factor analysis to evaluate the data from instructors' responses to the Faculty Orientations Survey and defined faculty educational orientations according to two discriminant functions: pursuit of ideas or preparation for life and work. Stark and Morstain's research led them to conclude that the faculty members' educational and curricular views varied along disciplinary lines.

Continuing the research on curricular design, Lattuca and Stark (1994) reviewed the recommendations of the Association of American Colleges for experiences to be included in undergraduate curriculum reform. They focused their research on four areas: "curricular coherence, the development of critical perspectives, the connection of learning to student's lives, and the reduction of barriers for underrepresented students" (p. 402). Faculty views on curricular reform in those four areas were recorded in the Association of American Colleges *Reports from the Fields* (as cited in Lattuca & Stark). Using content analysis, the authors analyzed responses to find disciplinary relationships, themes, intentions, foci, and differences. The findings were consistent with Becher's (1981) earlier classification of disciplinary characteristics.

For example, natural and physical sciences instructional personnel (hard/pure field) were adept at designing and describing curriculum goals for curricular coherence, however they found it more difficult to develop goals in the critical-perspective area. In

contrast, persons instructing in the humanities (soft/pure) were just the reverse: skillful at developing and describing goals for student development of critical perspectives but less adept at formulating curriculum goals for curricular coherence. The social sciences fell between these two areas. They found challenges in developing goals for both curricular coherence and development of curricular coherence, and were considered to be related to the diversity and variety of courses in the discipline. The researchers concluded that any attempt at reform in undergraduate, interdisciplinary curriculum should consider the differing perspectives of faculty from various disciplines.

Stark (2002) summarized an extensive study of the disciplinary influence on teacher's goals as they related to the instructional process. The research involved three phases: an interview phase to help develop the survey instrument; administering the Course Planning Exploration Survey to 2,311 faculty members at 97 colleges; and a follow-up study of 322 participants from the original survey who answered the original survey about planning an advanced course in the same field. Stark discovered discipline was a formative influence on teachers' goals and the process of course planning. "Clearly, discipline is the key predictor of classroom goals and beliefs about education while other factors have a much smaller influence" (p. 132).

Portmann (2000) and Portmann and Stick (2003) explored the relationship between discipline and curriculum design. Portmann surveyed 490 Washington State community and technical college faculty members about their curricular choices. The faculty members were grouped according to 11 different department affiliations: English, communication or languages; computer sciences; vocational; developmental education or adult basic education; and other. Their curricular choices were categorized as concept

learning, student intellectual development, or vocational development. The data analysis was interpreted to mean that statistically significant differences existed in all three categories among faculty members representing different academic departments.

In a constructive replication of Portmann's research, Dempsey (2006) reported similar results. Dempsey surveyed 344 faculty members in Ohio's public 2-year community, state, and technical colleges using the same survey instrument as Portmann. His results "compared favorably to Portmann's (2000) original work" (p. 92).

Barr and Rossett (1994) conducted research into the relationship of academic departments and curricular change in a large California community college. They enumerated the nature and changes faculty made in their course syllabi to determine if faculty were changing or revising their program or course curricula. The researchers looked for changes in course objectives, requirements, activities, and course materials including textbooks. They also queried the instructors as to how and why they changed their course or curriculum. The types of changes or revisions included changes in goals, assignments, tests, in-class activities, field trips, and course structure.

Reasons for instituting change varied widely. The most frequent responses included incorporating new technologies, responding to licensing requirements, applying new theory or approaches, updating materials, attracting new students, and responding to new standards for 4-year college transfer. Barr and Rossett (1994) classified the 133 respondents as teaching in vocational or academic fields. They found statistically significant differences between vocational and academic faculty in their reasons for changing their respective curricula and the determining factors that influenced the selection of course content.

Vocational faculty changed more courses than did academic faculty and were influenced more by changes in external forces such as technology and the marketplace. Despite that the research (Barr & Rossett, 1994) was limited in number of participants, location, and duration (it documented curriculum changes over only one semester and at a single institution), the results were congruent with previously mentioned research; faculty members with different department or discipline affiliation approached curricular change differently.

Teaching Approaches/Practice

H. Murray and Renaud (1995) discovered evidence of disciplinary influence in instructors' classroom teaching behaviors. The purpose of H. Murray's and Renaud's study was to determine if certain teaching behaviors displayed by faculty members from different disciplinary areas were related to students' perceptions of teaching effectiveness.

The researchers (H. Murray & Renaud, 1995) observed 401 faculty members teaching undergraduate lecture courses at the University of Western Ontario. They grouped teachers into three academic fields: arts and humanities, social sciences, and natural sciences and mathematics. To determine their frequency of use of specific classroom teaching behaviors the Teacher Behaviors Inventory (H. Murray, 1983)was administered and the data was analyzed using a multivariate ANOVA.

H. Murray and Renaud (1995) interpreted the results to mean that a significant difference existed among disciplinary groups in how frequently they used selected teaching behaviors. Faculty persons in the arts and humanities more frequently exhibited behaviors that sponsored student participation whereas science and social studies

instructional personnel used behaviors supporting organization or structuring of content. Although instructors in each academic disciplinary group demonstrated distinctive teaching behaviors, they did not translate into marked differences in the students' ratings of instructors' effectiveness.

Similarly, Lindblom-Ylanne et al. (2006) examined the relationship between academic discipline and instructors' approaches to teaching. The participants were 340 instructors from various academic disciplines at universities in Finland and the United Kingdom. The instructors completed the Approaches to Teaching Inventory (Trigwell & Prosser, 2004). The survey instrument was designed to identify and classify approaches to teaching as either conceptual change/student-focused (CCSF) or information transmission/teacher-focused (ITTF). Lindblom-Ylanne et al. grouped the academic disciplines applying Biglan's (1973a) four categories: pure hard, pure soft, applied hard, and applied soft.

One-way ANOVA and independent sample *t*-tests were used to analyze the disciplinary differences in teachers' approaches to teaching. The researchers found statistically significant differences in teaching approaches across the categories. The soft sciences scored significantly higher (t [300] = -4.54, p<.001) on the CCSF scale than did the hard sciences. The hard sciences scored significantly higher (t[300] = 3.58, p<.001) on the ITTF scale soft sciences categories. "However, a closer look, using the hard–soft, pure applied categories of Becher (1989) and Biglan (1973), did not reveal significant differences in teaching approaches between the 'pure' and 'applied' groups of either 'hard 'or 'soft' groups" (Lindblom-Ylanne et al., 2006, p. 294). This signified the differences in approaches to teaching was most pronounced between soft and hard

disciplines with little differences between the subgroups of pure hard and applied hard, and pure soft and applied soft.

Lindblom-Ylanne et al.'s (2006) study correlated well with the findings of H. Murray and Renaud (1995). In both studies the results enabled the researchers to claim that faculty members in the arts and humanities or pure soft category more often used instructional behaviors that were more student focused, while science or pure hard faculty demonstrated behaviors supporting structuring of content, or a more teacher-centered approach to teaching. Braxton (1995) coined the descriptive terms *affinity disciplines* to describe the soft disciplines. He surmised that the soft disciplines tended to have an affinity for implementing teaching innovations and teaching improvement.

Norton et al. (2005) researched the beliefs that could possibly explain the differences in the teaching behaviors of selected academic disciplinary groups. They received 556 completed, usable surveys from teachers in four United Kingdom higher education institutions regarding their beliefs and intentions about teaching. The survey instrument was a questionnaire developed from Gow and Kember's (1993) inventory of teachers' beliefs and intentions. They found significant differences ($p < 0.05$) among academic disciplines in three subscales of beliefs (interactive teaching, training for jobs, and use of media) and two subscales of intentions (interactive teaching and training for jobs). Those differences represented "genuine differences in teaching conceptions across different disciplines" (p. 554). The authors said that the questionnaire used in the study needed further development because it contained only one or two items for each scale, but the results were useful because they contributed to the body of empirical studies

supporting the claim that departmental/disciplinary differences do influence teachers' beliefs and actions in the classroom.

Matney (2001) studied faculties' selection of specific innovative-teaching and -learning techniques. The researcher surveyed faculty members at seven postsecondary institutions across the United States to determine the institutional and departmental factors that influenced faculty innovation and improvement of teaching and learning. Matney grouped the areas of faculty members' discipline into two categories, mathematics/science and humanities/social science. The survey instrument, administered through the NCPI, questioned instructors about their use of teaching innovations in the areas of active-learning practices, introduction of new teaching practices, and leading the scholarship of teaching and learning. The impact of the disciplinary area on teaching and learning innovations was significant ($p < 0.01$) in the use of active-learning practices and the introduction of new teaching techniques. Humanities/social studies instructors were more inclined to use active-learning techniques and introduce new techniques than were their mathematics/science colleagues.

Faculty members who had high ratings on participating in active-learning practices and shaping the scholarship of teaching also tended to be serving in departments perceived as having a strong reputation for teaching. But that interpretation actually was a function of selected disciplinary instructors having a similar attitude toward instructional practices and as a result their departments also had higher ratings. Thus, the correlation, while evident, might be spurious because it measured the same variables. Matney (2001) claimed that a major finding from the research was the indication that a "scholarly community is forming around teaching" and "there may be self selection between certain

departments with strong commitments to promoting teaching and faculty candidates who wish to place undergraduate teaching at a high priority level in their careers" (p. 95).

Although Matney's (2001) results concurred with the study by H. Murray and Renaud (1995), faculty members in humanities/social studies (pure disciplines) tended to use a more student-centered approach to teaching than did persons working as mathematics/science (hard disciplines) faculty instructors. However, the conclusions from that study must be tempered due to the low response rate (26% to 30% depending on discipline).

Palmer (2002) used data from the U.S. Department of Education's 1999 National Survey of Postsecondary Faculty to profile community-college faculty members' work based on 11 disciplinary groups: business, education, engineering and computer sciences, fine arts, health sciences, human services, humanities, life sciences, natural physical sciences and mathematics, social sciences, and vocational education. Palmer reviewed the responses submitted by 89,000 full-time faculty members who indicated teaching was their primary responsibility. Responses to selected instructional modes allowed for claiming that 88% of instructors identified the lecture as their primary method of instruction. The faculty split along career and academic lines in their use of nonlecture teaching methods. The percentages of instructors in engineering and computer sciences, vocational programs, health sciences, and fine arts that selected the use of laboratories, clinics, or problem sessions as their primary mode of instruction was much greater (53–61%) than that in the remaining disciplines (19–47%). The split between career and academic disciplines and the participation in distance education was also markedly different. At least 29% of engineering, computer sciences, and business teachers reported

teaching one or more courses as a distance course, while those teaching in the other disciplines reported teaching 18% or fewer courses as a distance course.

Faculty responses to inquiries about their student-assessment techniques revealed additional variations among disciplines. The use of writing as an assessment was more prevalent in English courses than in mathematics and science courses. Mathematically and scientifically based courses were less likely to employ peer-evaluation assessment techniques than all other disciplinary groups except education and the social sciences. Palmer (2002) said that the disciplinary variations in assessment were "variations in the student–teacher relationship, with faculty members in some disciplines taking a more directive stance toward students than colleagues in other fields" (p. 16), and reiterated the importance of recognizing disciplinary differences among the faculty members of 2-year colleges. Gratuitously, Palmer said that the current movement among national disciplinary organizations to improve pedagogy in their discipline probably was the most prudent pathway to advance improvements in teaching and learning.

The work by H. Murray and Renaud (1995), Lindblom-Ylanne et al. (2006), Matney (2001), and Norton et al. (2005) used various surveys to identify and classify teaching approaches and practices; however, their results revealed that departmental /disciplinary differences did have an impact on the teaching behavior of faculty members. While these researchers focused on university and 4-year institutional faculty, Palmer's (2002) study focused exclusively on the members of faculties at 2-year colleges. Palmer's research also recognized the important influence of discipline/department on faculty teaching and thus student learning.

Summary of Departmental/Disciplinary Influences

This review of selected available and relevant literature on the findings of disciplinary differences to instructional practices has provided a platform for claiming that a faculty person's discipline contributes to the instructional goals selected but also to how respective instructors defined and communicated their goals to students (Eljamal et al., 1998; Eljamal et al., 1999; Fox, 1997; Smart & Ethington, 1995). Also of importance is that the literature supported the belief that disciplinary affiliation influenced an instructor's choices and methods for curricular planning and design. (Barr & Rossett, 1994; Dempsey, 2006; Lattuca & Stark, 1994; Portmann, 2000; Portmann & Stick, 2003; Stark & Morstain, 1978). Teaching behaviors, including practices and approaches to content manifested by instructors, also reflected a disciplinary alignment (Lindblom-Ylanne et al., 2006; Matney, 2001; H. Murray & Renaud, 1995; Norton et al., 2005; Palmer, 2002).

Although the evidence for departmental/disciplinary influence on the work of persons engaged in instructional activities is strong, there are few studies directly related to the teaching faculty members of community colleges (Dempsey, 2006; Portmann 2000; Portmann & Stick, 2003). In addition, only one study (Matney, 2001) focused on the topic of faculty members' use of innovative active-teaching techniques. In recognition of the lacuna existing in how or why instructional personnel working in 2-year colleges identify their respective teaching goals and practices, the present investigation sought to uncover what influenced innovative teaching in technical colleges in the State of Georgia.

> The strong influence of disciplines on academics' beliefs, on teaching and on students' learning, would suggest that disciplines need to be subjected

> to greater systematic study, especially regarding their effect on the quality of teaching and learning in higher education. (Neumann, 2001, p. 144)

Pedagogical Knowledge

The importance of pedagogical knowledge as a basis for instructional personnel to become effective teachers and concomitantly increase student learning has been a topic of interest for a number of years. The interest probably has been more empirical than scientific because of the complexity of the issues.

Hativa (2002) conducted a case study of two law school professors who had received mid-to-low student ratings of their instruction. To analyze their teaching, Hativa used pre- and posttreatment student surveys of the professors' course ratings, direct classroom observations, interviews with the professors, and anonymous interviews with some of their students. Hativa identified three areas that contributed to the poor teaching ratings by the students: personal characteristics and aptitudes that negatively affected classroom behavior, a lack of sufficient pedagogical knowledge, and damaging thinking and beliefs regarding instruction and students.

One law professor was described as a veteran professor in his 40s, with over 25 years at the institution. He had taught the same course for 15 years. The second professor, a novice teacher, was in his early 30s. It was his third year teaching the course. The dean of the law school identified both professors as having had poor student evaluations the previous year. The researcher used the intervention method of personal consultation to provide individual guidance on improving instruction. The intensive treatment over 4 months involved identifying and addressing three areas for improvement for each professor. After the intense intervention treatment, there was a marked improvement in

student satisfaction ratings of these professors. Hativa (2002) concluded that modifying and changing both pedagogical behavior and personal characteristics were necessary to achieve effective instruction, as was evidenced by the elevated ratings from the students.

In an earlier study, Hativa (1998) conducted a case study of a physics professor with low student ratings in the area of clarity in teaching. The purpose of that study was to discover the relationship between clarity of teaching and teacher pedagogical knowledge: knowledge of the learners and knowledge of self. Havita (1998) collected data about the professor's teaching through classroom observation, student questionnaires, student evaluations of the professor, interviews with teaching assistants, and interviews with the professor. After evaluating those data sources the researcher concluded that the low student perceptions and low student retention in the course was due to a lack of pedagogical knowledge.

Essentially, that instructor was not able to apply sound pedagogical practices, and evidenced a lack of understanding of the dynamics inherent in teaching and student learning. Despite the fact that both of the Hativa studies (2000, 1998) were qualitative and with few participants, the findings are useful when considering the total picture of effective instruction. Although the two law and one physics instructors apparently were sufficiently schooled in their respective disciplines, they lacked knowledge on how to effectively communicate with students so students would become vested in learning the material.

An analogy is that the three instructors had roadmaps and transportation for going from point A to point B but did not know the rules of the road and thus were not able to navigate the terrain. The result was that they had less than stellar teaching experiences

and their students voiced displeasure with their efforts. Compounding each situation was the prospect that students attitudes probably were colored to the point of claiming the learning experiences were inadequate.

Based on the aforementioned studies, Hativa (2000) concluded that general pedagogical knowledge and pedagogical content knowledge was essential for effective teaching, and noted that most college instructors had little or no training in pedagogy. Instead, they learned about teaching through trial and error or based their teaching on the way they were taught; such practices tended to be reflected by student evaluations that were not positive. Hativa (1993, 1995, 1998, 2000) contended that such an approach to instructional activities essentially was disorganized, and the haphazard or unplanned methods for learning about teaching practices would lead to misunderstandings, maladjustments, and ineffective instructional behaviors. An obvious implication was that the art of instruction too often was neglected on the premise that almost anyone could teach as long as the content was known. It was a false belief.

Saroyan and Snell's (1997) findings supported Hativa's (1998, 2000, 2002) subsequent assertions that pedagogical knowledge was essential for effective teaching. Saroyan and Snell studied the pedagogical attributes of medical-school lectures. The lectures categorized as pedagogically driven were more student centered and interactive. Those lecturers created environments that promoted students' learning, and included evaluation components in the courses to give feedback to students. Student perceptions of the more pedagogically oriented lectures were rated higher than content-driven and teacher-centered lectures.

Gibbs and Coffey (2004) conducted a 3-year study to evaluate the effectiveness of 30 postsecondary teacher-training programs across eight European countries. They evaluated the training programs' effectiveness in producing changes in teachers' approaches to teaching and in teachers' behavior. They also investigated any subsequent changes to their students' approaches to learning that could be accredited to the teacher training. The 104 participants completed the Approaches to Teaching Inventory (Trigwell, 1995) once at the beginning of the training and again a year later. The results of the inventory were used to rate their instructional methods on two scales: teacher focused and student focused.

A year after receiving the training, the teacher-training group increased significantly in their student-focused approach to teaching ($t = 4.15$, $p < .001$) and decreased, though not significantly, in the teacher-focused approach to teaching (-0.87, n.s.). The student-focused score of the control group was significantly less than that of the training group ($t = -4.0$, $p < .05$). The interpretation of the results between the control group and the test group must be tempered with the knowledge that the size of the control group was small, however the before and after scores of the training groups remain useful.

Two questionnaires were administered to the students of the instructors before and after their participation in the teacher training. The students' responses to the Student Evaluation of Educational Quality (Marsh, 1982) and the Module Experience Questionnaire (Ramsden, 1991) provided data to evaluate instructors' teaching skills and students' approaches to learning. The data from the Student Evaluation of Educational Quality indicated statically significant improvements in the teaching skills of trained

groups as perceived by their students. The Good Teaching score of the Module Experience Questionnaire also demonstrated a significant gain for the training group.

Gibbs and Coffey (2004) concluded that the data from the study provided support that teacher training can "increase the extent to which teachers adopt a Student Focus, improve a number of aspects of teachers' teaching, as judged by students, and can change teachers such that their students' improve their learning" (Gibbs & Coffey, p. 98).

Postareff et al. (2007) studied the effect of pedagogical training on improving teaching effectiveness of 200 instructors at the University of Helsinki. The instructors volitionally attended pedagogical training that consisted of short introductory courses on learning and instruction in higher education and longer 1-year courses. The year-long courses aimed at developing a deeper understanding of theories of learning and instruction. The focus of the training was to introduce a change from a teacher-centered approach to a more student-centered approach, and to learn the impact the training had on the teachers' concepts of teaching and self-efficacy. The study was both quantitative and qualitative.

The survey instruments used were the Approaches to Teaching Inventory (Trigwell & Prosser, 2004) and an added new section (developed by Trigwell, Ashwin, & Lindblom-Ylanne) that ostensibly measured self-efficacy. The Approaches to Teaching Inventory was designed to measure the approaches to teaching on a scale from ITTF to CCSF. In an effort to learn if the length of pedagogical training provided to an instructor had an impact on a person's pedagogical practices, a one-way ANOVA was used to study the expected changes in scoring. Self-efficacy beliefs scores were significantly higher ($F(3,196) = 2.90$, $p = .036$) in the group with the most pedagogical training. The student-

centered approach (CCSF) scores were highest ($F(3,196) = 4.63$, $p = .004$) in the group with the most pedagogical training.

Postareff et al. (2007) interpreted the results to mean that pedagogical training had a positive effect if the pedagogical training was at least a year long (the group with the most training). That group evidenced a shift toward student-centered teaching (CCSF), and showed a decrease in the teacher-centered approach (ITTF).

When the pedagogical training period was shorter, subsequent pedagogical practices of teachers became more teacher-centered (ITTF) and the students gave ratings lower on the student-centered (CCSF) scale than persons who had no training or who had just begun their training. The self-efficacy scores followed the same pattern. The authors (Postareff et al., 2007) proposed that the short courses were successful in providing instructors with information about their shortcomings but were not of sufficient duration to provide them the opportunity to become competent in improving their teaching. The researchers noted that any improvement in the effectiveness of participants' teaching was a slow process and required a least a year or more of training; "Training makes teachers more aware of the problems they have in their teaching, and after a longer training process they become more aware of an ideal way to teach" (p. 569).

Research by Norton et al. (2005) reported results contrary to Gibbs and Coffey (2004) and Postareff et al. (2007). One aim of the Norton et al. study was to determine whether instructors' beliefs and intentions were influenced by their involvement in training in teaching in higher education. Higher education instructional faculty in an institution in the United Kingdom were administered an amended questionnaire by Gow and Kember (1993). That tool was designed to measure the differences in teachers'

beliefs about higher education and their views on the intention or purpose of higher education along two dimensions: knowledge transmission, and learning facilitation.

The respondents included 50 teachers who had received their institution's training on teaching and learning in higher education and 72 untrained teachers. A multivariate ANOVA found no statistically significant difference between the two groups $F(18, 103) = 0.82$, $p > 0.6$, and the researchers concluded that participation in that teacher-training program did not yield any desired or measurable changes in the instructors' teaching beliefs or intention. Conceivably the investigators did not use tools that allowed for identifying sought-after behavioral changes or beliefs, or perhaps the practices sought were not justified for achieving presumed modifications among the participants. Norton et al. (2005) commented, "Genuine development will come about only by addressing teachers' underlying conceptions of teaching and learning" (p. 561).

McAlpine and Weston (2000) studied 6 professors recognized for their teaching excellence. Three had been trained as teachers. To document their teaching prowess the professors were videotaped, and then interviewed about how they reflected on their teaching. The researchers coded the transcripts according to constructs drawn from literature. They analyzed the data to determine how the professors reflected on their teaching. McAlpine and Weston developed a model to depict their understanding of how the metacognitive process of reflection on instructional practices enhanced such activities (see Figure 2.2).

The model of the metacognitive process of reflecting (Figure 2.2) illustrated the reflective teaching process proposed by the researchers. Instructors monitored a multitude of cues to determine if their teaching actions were achieving their teaching and learning

goals. The most important cues were student responses to their teaching. In the decision-making process they would adjust or modify their teaching to better achieve their goals. The modification could be to the content or the teaching method. The modification would only be made if the cues received were perceived as unacceptable or out of the corridor of tolerance. The monitoring and decision-making processes were linked to knowledge and action.

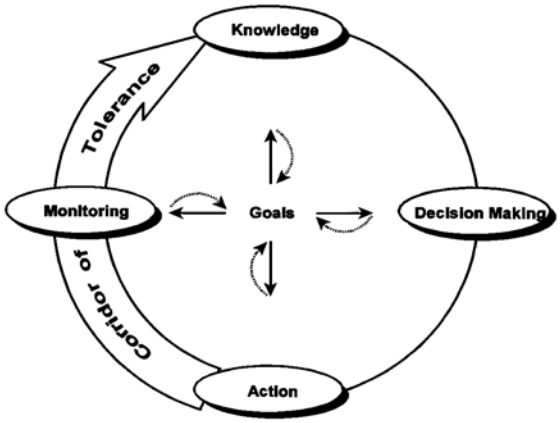

Figure 2.2 Model of the metacognitive process of reflecting.
Note. From "Reflection: Issues Related to Improving Professors' Teaching and Students' Learning," by L. McAlpine & C. Weston, 2000, *Journal of Instructional Science and Technology*, *28*, p. 371.

The authors drew on literature to identify several dimensions of the knowledge domain (other than knowledge of content) necessary for exemplary teaching including pedagogical knowledge, pedagogical-content knowledge, knowledge of learners, and experiential knowledge. The researchers claimed that the three most successful professors "drew most heavily on pedagogical knowledge (34%) to articulate their rationales for monitoring and decision making as well as knowledge of learners (20%)" (p. 370).

The McAlpine and Weston (2000) research reinforced the position that just possessing knowledge about teaching (pedagogy) did not necessarily lead to better teaching. The engagement of reflection on teaching and linking experiences to future

actions were keys to developing excellence in teaching. In conclusion, the authors claimed that pedagogical knowledge and pedagogical-content knowledge were essential concepts employed by outstanding professors, but were only effective when combined with reflection.

> The intentionality of linking knowledge and experience to future action through reflection will likely improve thinking about teaching and carries a greater potential to improve enactment of teaching than does simply knowledge building. But neither carries a guarantee. (McAlpine & Weston, 2000, p. 375)

Summary of Pedagogical Knowledge

The types, methods, and longevity of pedagogical training evaluated in these studies (Gibbs & Coffey, 2004; Hativa, 1998, 2002; McAlpine & Weston, 2000; Norton et al., 2005; Postareff et al., 2007; Saroyan & Snell, 1997) varied, therefore caution needs to be exercised when considering their respective merits. However, the information reported allowed for considering general assumptions about the influence of pedagogical training on effective and innovative teaching.

Hativa (1998, 2002) used case-study research to support claims that pedagogical knowledge was essential to becoming an effective teacher. The research of Saroyan and Snell (1997), Gibbs and Coffey (2004), and Postareff et al. (2007) supported that contention. In contrast, the results from McAlpine and Weston (2000) and Radloff (2002) were not as conclusive. Those latter researchers stated that pedagogical training produced some improvements in teaching practices but was not as pervasive as deemed necessary to produced effective and long-term change. Norton et al. (2005) presented an even more

distressing position by claiming there was no positive correlation between pedagogical training and improvements in teaching effectiveness.

Active Learning

Encouraging active learning was one of the seven principles of good practices in undergraduate education espoused by Chickering and Gamson (1987). The other six were encourages contact between students and faculty, develops reciprocity and cooperation among students, gives prompt feedback, emphasizes time on task, communicates high expectations, and respects diverse talents and ways of learning. Active-learning practices involve students in the learning process allowing them to have a sense of ownership of their education and thus make them more efficacious toward their learning responsibilities.

Kember and Gow (1994) asserted, “It is now widely agreed that teaching does have a profound effect on student learning” (p. 59). Through interviews with lecturers in a Hong Kong polytechnic institution, and through a trial questionnaire administered to all lecturers in five departments of that institution, the authors identified two orientations to teaching. From that information they developed a final questionnaire designed to identify the two orientations to teaching—*learning facilitation* and *knowledge transmission*—and to correlate both with the quality of student learning (Gow & Kember, 1993; Kember & Gow). The instrument was administered to lecturers at two polytechnic institutions in Hong Kong, and 170 useable questionnaires were returned. The authors considered the participants similar to university faculty in universities in the West.

To relate student-learning approaches to teaching orientation, more than 3,000 students in the departments of the participating instructors were given the Biggs Study

Process Questionnaire (Biggs, 1987) early during each course and again toward the end of a respective course. Using the data from the Study Process Questionnaire, Kember and Gow (1994) categorized student-learning approaches as deep, surface, and achieving, and reported a significant negative correlation (-0.61, $p < 0.01$) between the learning facilitation style of teaching and students' surface-approach scores.

Departments identified as having instructors with an inclination toward learning facilitation discouraged surface-approach learning. Departments identified as having instructors with a propensity toward knowledge transmission discouraged deep-approach learning. Kember and Gow (1994) concluded "Adoption of interactive teaching methods clearly encourages a deep approach and also seems to increase the level of keenness and enthusiasm" (p. 69). The relationship between teaching-orientation style and depth of student learning identified by Kember and Gow represented an example of a subtle change in instruction in higher education. The emphasis was changed from instruction to student learning.

Barr and Tagg (1995) capitalized on the earlier work (Kember & Gow, 1994) and identified a paradigm shift in undergraduate education that went from teaching by an instructor to learning by a student. They explained it as a shift in the purpose of education. The Instructional Paradigm purpose was to provide instruction (teaching) but the Learning Paradigm mission was student learning. The learning theory of the new paradigm was student centered and controlled, and students were active participants in the learning process. In contrast the Instruction Paradigm was teacher centered and predicated on instructor-delivered lectures. The Learning Paradigm was cooperative, collaborative, and supportive and the role of an instructor was as the designer of learning

methods and environments rather than as a disseminator of information. It emphasized designing learning activities in which students were active participants and knowledge was constructed and influenced by students' experiences.

Ostensibly the instructor-designed learning activities could assume multiple characterizations but should involve the following student characteristics: increased student engagement in activities, increased motivation, and increased involvement in critical thinking. In addition, students develop skills and explore attitudes and values. In an active-learning environment, students can receive immediate instructor feedback on their learning progress (Bonwell, 1991). "In the context of the college classroom, active learning involves students in doing things and thinking about the things they are doing" (Bonwell, p. 2).

As previously documented, Hativa (2000) asserted that active learning was necessary to ensure effective student learning and recommended the following teaching methods to create active student learning: discussion, group-work/cooperative learning, community of learners/peer teaching, role playing, and case methods. Such activities are classified as problem-based learning and/or experiential learning with the instructor serving as a designer or arranger rather than a presenter or authority figure. Hativa (2000) suggested using peer evaluation and feedback as well as student feedback as a source for reflection for improving instruction.

Hativa's (2000) description of active learning expanded on Bonwell's (1991) definition by proposing that improvements and additions to the lecturing method could facilitate student active learning. In addition, Hativa (2000) proposed that giving time for

reflection would enhance student learning and include students as active participants in the learning process.

Glendale Community College, Glendale, Arizona instituted a program to promote a shift toward the Learning Paradigm by creating courses using active-learning techniques. Course assignments and assessments in that instructor-driven program were guided by student intelligences as identified by Gardner's multiple-intelligences theory. In those courses, labeled Multiple Intelligences/Learning for Understanding, students chose creative-learning options based on their intelligence type. These learning options required students to demonstrate evidence of understanding, application, and reflection of the concepts while exploring alternative, creative-learning options. After 3 years of the program, more than 3,400 students had completed at least one Multiple Intelligence/Learning for Understanding course.

Survey results from current and former students showed "increased student motivation, longer retention of academic material and a high satisfaction of learning compared to traditional methods" (Diaz-Lefebvre, 2006, p. 136). Although the survey return rate was only 34% and data were based on students' self-evaluations of the courses, not on a measure of improved learning, the findings were deemed relevant. They provided evidence that students' perception of their learning experience was a more positive and productive learning experience than they experienced with traditional methods.

Summary of Active Learning

The paradigm shift from teaching to learning described by Barr and Tagg (1995) precipitated the promotion of learner-centered, active-learning teaching strategies.

Active-learning methods involve the students as active participants in the learning process (Bonwell, 1991; Hativa, 2000). Students experienced a deeper, more positive and productive learning experience when their instructors employed active-teaching techniques (Diaz-Lefebvre, 2006; Kember & Gow, 1994).

Scholarship of Teaching and Learning

Scholarship of Teaching and Learning Described

With Boyer's (1990) publication of *Scholarship Reconsidered,* higher education began to focus on teaching and learning as essential work of the faculty and as a fruitful area for research. Boyer argued that scholarship of teaching should be considered along with the scholarship of discovery, scholarship integration, and scholarship of application as having equal worth to the research endeavors of the professoriate. His intent was to direct attention to the sincere efforts required for effective teaching and the energies required for ensuring student learning. The analogy was that an effective instructor had to approach the instructional process with the same mindset as a person engaged in more conventional forms of research: identifying the issue, reflecting on how it could be addressed, engaging in the process by collecting data on the efforts, analyzing the results, and then making viable conclusions.

Cross (1990) introduced the concept of classroom research to improve classroom teaching and student learning. This author contended that most college teachers taught as they were taught, and that they used teaching practices observed and experienced without much thought to the effectiveness of those practices. Cross contended that classroom research would provide instructors with continuous and insightful information on the effectiveness of their teaching practices. The goal of classroom research was "to integrate

research into everyday teaching. A well-designed classroom research project should teach as well as provide feedback about the effectiveness of that teaching" (p. 14).

Cross and Steadman (1996) expanded on Boyer's (1990) theme of the four areas of scholarship (teaching, discovery, integration, and application) by proposing that the scholarship of teaching included scholarship about teaching itself. Therefore, the scholarship of teaching would involve the scholarship of discovery, integration, and application.

Investigating how people learned would be an application of the scholarship of discovery within the scholarship of teaching. Studies into how students created meaning from all parts of a lesson would be a topic of research for the scholarship of integration. Finally, the scholarship of application would involve applying the knowledge obtained from research about student learning to the classroom teaching–learning process. Cross and Steadman (1996) proposed that the interpretation of the scholarship of teaching and learning would inform and transform the teaching–learning process.

Shulman (2000) further characterized the scholarship of teaching and learning by describing a distinction between the scholarship of teaching and scholarly teaching. Scholarly teaching was structured on grounded research in course design and development, teaching strategies, and assessment. The scholarship of teaching went a step beyond scholarly teaching by sharing the scholarship with peers thereby subjecting it to reflective analysis. Shulman declared both were equally valuable, and of paramount importance for improving teaching and learning and informing persons engaged in making decisions about policy related to higher education.

Scholarship of Teaching and Learning in 2-Year Colleges

In contrast to 4-year colleges and universities, 2-year institutions of higher learning traditionally have emphasized teaching over research. Of note is evidence that these institutions have becoming increasingly more engaged in the scholarship of teaching and learning. Classroom research has provided a form of research ideally appropriate for community/technical college faculty, as illustrated by Middlesex Community College in Bedford and Lowell, MA. That institution developed a program to make the scholarship of teaching and learning part of the campus culture. They participated in The Carnegie Teaching Academy Program and faculty members were encouraged to develop personal minigrants to conduct research into the curricular approaches of interest. The ultimate goal of the research was to enhance student learning. Although no statistical data was presented to confirm the achievement of the goal, Middlesex Community College served as an example of the application of scholarship of teaching and learning in the 2-year college context (Sperling, 2003).

Ford (1999) reviewed the status of scholarship in the community-college system with recognition that the emphases in those institutions has been on instructional delivery with little consideration for critical reflection on methods and outcomes. Ford contended that expanding the scope of what was deemed research to include scholarship on the scholarly activities 2-year college faculty were doing would come under the rubric of action research, “defined as a systematic process of studying one’s own practice to find answers and practical solutions to pragmatic problems” (p. 7). In such activities, an instructor identified and assessed a problem, planned and designed the process to address it, and evaluated the outcomes. Such research leads to knowledge that can be applied not

only to the profession as a whole, but also directly to the classroom to enhance faculty members' instructional skills. The process was similar to what transpired with conventional research.

Prager (2003) contended that faculty scholarly pursuits at community colleges were valid and to ignore those efforts for improving instructional practices and enhancing student learning has been a disservice to the community-college community. "It is the absence of scholarship and not the presence of teaching that most distinguishes community colleges from other 2-year and from many 4-year schools" (p. 580). This spurious shunning of scholarship has resulted in community colleges being left out of national discussions of undergraduate education although "they teach nearly 40% of all college students and almost 50% of college freshman" (p. 579).

Prager (2003) asserted that of the four categories of scholarship defined by Boyer (1990)—discovery, integration, application, and teaching—the categories of application and teaching were compatible with the 2-year college mission, but there was a clear need for objective qualitative criteria for community-college scholarship as well as a precise definition of community-college scholarship. In so claiming, Prager reinforced Palmer's (1991) earlier assertion of the necessity for scholarship to go beyond the confines of the 2-year institution and that it should be subjected to the critical review of experts in the field.

Prager (2003) noted the dearth of community-college representation on national boards of academic organizations concerned with undergraduate education, and indicated the dearth of activity in scholarship lent itself to exclusion of such professional educators. However, a systematic effort to involve and encourage community-college educators in

research activities would have considerable merit for higher education in general and in particular community colleges and technical schools.

A compelling case for community-college faculty to become more involved in scholarly endeavors was made (Prager, 2003) and aided by the work of Palmer (2002) who had explored the involvement of community-college faculty in scholarship. Palmer evaluated the work of full-time community-college faculty using data from the 1999 National Survey of Postsecondary Faculty. That national survey database yielded approximately 89,000 full-time, teachers of credit courses in community colleges in the United States. One of the areas Palmer investigated was the scholarly pursuits of the 2-year faculty. Of the instructors participating in the survey,

> 33 percent indicated they are "engaged in professional research, proposal writing, creative writing or creative works": 30 percent have published at least once in the two years preceding the [National Survey of Postsecondary Faculty] survey; and 41 percent have completed at least one presentation, exhibition, or performance. (Palmer, 2002, p. 16)

Although about one-third of the faculty indicated they were involved in scholarship, Palmer found variations in the proportion of faculty participation. The greatest discrepancy was between academic and career faculty. He found the arts and humanities faculty more likely to be engaged in research, publication, and other creative work. The career faculty, however, were more likely to produce out-of-class scholarship focused on instructional and textbook materials.

Lueddeke (2003) correlated instructors' concepts of teaching to their approach to the scholarship of teaching and discovered that the disciplinary affiliation of a faculty

member markedly influenced the approach taken to the scholarship of teaching. The participants for his study were 135 instructors in business, social science, and technology at the Southampton Institute in the UK, and 17 nursing faculty at the University of Wales in Bangor, Wales.

The Approaches to Teaching Inventory (Trigwell, 1995) was used to classify instructors as either ITTF or CCSF. The Approaches to the Scholarship of Teaching Inventory was used to identify types of scholarly activities such as engaging students in research activity and adopting inquiry approaches in classroom situations. The business and social studies participants scored relatively high on the CCSF concept of teaching, while nursing and technology instructors scored appreciably lower. The researcher (Lueddeke, 2003) identified notable relationships between those who employed the CCSF concept of teaching and several scholarship practices, and concluded that a persons' discipline influenced the preferred approach to the scholarship of teaching.

Summary of the Scholarship of Teaching and Learning

Faculty participation in the scholarship of teaching and learning has the potential to improve teaching effectiveness and therefore affect student learning. Although teaching, not research, traditionally has been the primary focus of 2-year college faculty, Palmer (2002) reported that one-third of community-college faculty claimed they were conducting some type of research. Sperling (2003), Ford (1999), and Prager (2003) argued for the participation of 2-year college faculty in the scholarship of teaching and learning, and Lueddeke's (2003) research revealed a relationship between the participation in the scholarship of teaching and the disciplinary orientation of the instructor.

Summary

This review of literature has provided evidence that supports the influences of disciplinary affiliation and pedagogical training on faculty pedagogical choices. Biglan (1973a, 1973b), Kolb (1981), and Becher (1981, 1987, 1989, 1994) established the typology of disciplines based on the distinctive cultures and epistemology exemplified in each category. Further, they recognized the significance of those distinctions as they applied them to research in higher education. In contrast to those studies, Barr and Rossett (1994) and Cohen and Brawer (2003) described of the culture of departments/disciplines in community colleges as exhibiting a dichotomy of instructional frameworks between liberal arts and vocational education.

Research that analyzed the influence of disciplinary differences on the work of the faculty revealed that disciplinary affiliation influenced a faculty person's decision making in several areas. The academic discipline contributed to what goals they selected and how they defined and communicated their goals (Eljamal et al., 1998; Eljamal et al., 1999; Fox, 1997; Smart & Ethington, 1995), and a faculty person's disciplinary affiliation influenced the choices and methods of curricular planning and design (Barr & Rossett, 1994; Dempsey, 2006; Lattuca & Stark, 1994; Portmann, 2000; Portmann & Stick, 2003; Stark & Morstain, 1978).

Faculty teaching behaviors, practices, and approaches tended to reflect their disciplinary alignment (Lindblom-Ylanne et al., 2006; Matney, 2001; H. Murray & Renaud, 1995; Norton et al., 2005; Palmer, 2002). Only a few studies were found that directly studied the influence of departmental/disciplinary affiliation on the work of faculty in technical colleges (Dempsey, 2006; Portmann 2000, Portmann & Stick, 2003).

Those studies concluded that departmental affiliation affected the course planning decisions of technical-college faculty.

The studies about the influence of pedagogical training on effective and innovative teaching revealed mixed results. Case studies as well as the research of Saroyan and Snell (1997), Gibbs and Coffey (2004), and Postareff et al. (2007) supported Hativa's (2000) contention that pedagogical knowledge was essential to becoming an effective teacher. In contrast, the studies by McAlpine and Weston (2000) and Radloff (2002) were not as conclusive. They reported that pedagogical training produced some improvement in teaching but that it was not as pervasive as deemed necessary to produce effective, long-term change. Norton et al. (2005) found no positive correlation between pedagogical training and improvements in teaching effectiveness.

The literature reviewed on instructional personnel's use of active-learning techniques indicated that the uses of such techniques created a deeper, more positive, and productive learning experience for students (Diaz-Lefebvre, 2006; Kember & Gow, 1994). In addition, the literature reviewed was interpreted to mean that participation in the scholarship of teaching and learning had the potential to improve teaching effectiveness and therefore affect student learning.

Teaching, not research, traditionally has been the primary focus of 2-year college faculty. Sperling (2003), Ford (1999), and Prager (2003) presented strong cases for the participation of 2-year college faculty to be engaged in the scholarship of teaching and learning, and Palmer (2002) reported that one-third of community-college faculty claimed they were conducting some type of research. Lueddeke's (2003) research

revealed a relationship between the participation in the scholarship of teaching and the disciplinary orientation of the instructor.

The present research explored the influence of disciplinary orientation and pedagogical training on the participation of college instructors in the scholarship of teaching and learning at the technical-college level in the State of Georgia. A detailed description of the methodology employed for this study is presented in the next chapter.

CHAPTER 3

METHODOLOGY

This quantitative study investigated the influence of faculty characteristics and their relationships to the use of innovative pedagogical practices made by faculty in the Technical College System of Georgia. The overriding question was, Does departmental affiliation and pedagogical training/education influence faculty persons' use of innovative-teaching practices?

The faculty characteristics studied were the self-reported level of pedagogical training/education that included active-learning practices and departmental affiliation. The level of pedagogical training/education (no professional training, faculty-development training, college-credit courses in pedagogy, or a degree in education) and departmental affiliation served as the independent variables. The departmental affiliations were grouped into six categories: English and social sciences (including speech, humanities, psychology, and sociology), science and mathematics, business and computer sciences, allied health and nursing, vocational/industrial and technical, and adult literacy/adult basic education.

Innovation in teaching was determined by three dependent variables: participation in the scholarship of teaching and learning, introduction of new teaching techniques, and active-learning practices. The dependent variable, participation in the scholarship of teaching and learning, was a scale of items on "which faculty members rated how often they performed research in teaching, coached other faculty in their teaching, and made evaluations and recommendations regarding teaching practice effectiveness" (Matney, 2001, p. 81).

The second dependent variable, introduction of new teaching techniques, was assessed by responses to two questions: How frequently do you introduce new or experimental teaching strategies? and In how many of your courses do you try new teaching practices?

Faculty members' ratings of how frequently they incorporated specific active-learning techniques such as small-group work, group projects, in-class presentations, and student-led discussions and activities comprised the third dependent variable, active-learning practices. The variables are addressed in greater depth later in this chapter.

Research Questions

This study sought to determine the influence of faculty persons' department affiliation and pedagogical training on the adoption of innovative pedagogical practices. The participants were full-time faculty members of the Technical College System of Georgia. All faculty members in the Technical College System of Georgia held the rank of instructor. The following seven subquestions were addressed:

1. Does departmental affiliation influence faculty members' adoption of active-learning practices as indicated by scores on the Faculty Survey on Teaching Practices?
2. Does pedagogical training influence faculty members' adoption of active-learning practices as indicated by scores on the Faculty Survey on Teaching Practices?
3. Does a faculty person's departmental affiliation influence their involvement in activities related to activities on the scholarship of teaching and learning scores on the Faculty Survey on Teaching Practices?

4. Does a faculty person's pedagogical training influence their involvement in activities related to activities on the scholarship of teaching and learning scores on the Faculty Survey on Teaching Practices?
5. How do faculty members evaluate their department's support of faculty implementing innovative-teaching practices?
6. How frequently do faculty members introduce new active-learning teaching methods?
7. How do instructional faculty members learn to use new teaching, learning, or assessment techniques?

Hypotheses

The first four research questions were refined into the following hypotheses:

H_o 1: No statistically significant differences exist in the use of active-learning practices among faculty members from different departments.

H_1 1: There are statistically significant differences in the use of active-leaning practices among faculty members from different departments.

H_o 2: No statistically significant differences exist in the use of active-learning practices among faculty members with different levels of pedagogical training.

H_1 2: There are statistically significant differences in the use of active-learning practices among faculty members with different levels of pedagogical training.

H_o 3: No statistically significant differences exist in faculty involvement in activities related to the scholarship of teaching and learning as a consequence of a participant's departmental affiliation.

H_1 3: There are statistically significant differences in faculty involvement in activities related to the scholarship of teaching and learning as a consequence of a participant's departmental affiliation.

H_o 4: No statistically significant differences exist in faculty involvement in activities related to the scholarship of teaching and learning among faculty members with different levels of pedagogical training.

H_1 4: There are statistically significant differences in faculty involvement in activities related to the scholarship of teaching and learning among faculty members with different levels of pedagogical training.

Subquestions 5 through 7 did not lend themselves to hypothesis testing.

Population

The population for this study was the entire full-time faculty compliment employed in the Technical College System of Georgia during the 2008–2009 academic year. Using instructional personnel from the State of Georgia was decided on due to the fact the researcher had a vested interest in the information and appropriate administrative relationship to secure the relevant data. Furthermore, securing such data allowed for subsequent comparisons with two prior studies that addressed similar issues in similar institutions; Portmann (2000) and Dempsey (2006).

The most current statistics available on employed instructors in the Georgia Technical College System were from the 2006–2007 academic year. At that time, the full-time faculty numbered 2,193. At the time the survey was administered, March 2009, the state of Georgia has 33 technical colleges. In June 2000, the governor of Georgia changed the status of all state technical institutions to technical colleges. Those

institutions offer associate's degrees, diplomas, certification programs, adult literacy, and economic-development programs. The Technical College System of Georgia is the state agency responsible for overseeing the technical colleges.

Sample Size

To achieve a 95% confidence level, 238 returned usable surveys had to be received. The sample size was determined by Cochran's sample size formula for continuous data: $n_o = (t)^2 \times (s)^2 / (d)^2$; $n_o = (1.96)^2 \times (1.56)^2 / (.15)^2$ $n_o = 266$.

t = value for alpha level of .025 in each tail = 1.96

s = estimate of standard deviation in the population (estimate of variance deviation for a 5-point scale)

d = acceptable margin of error for the mean being estimated (number of points on scale x in an acceptable margin of error; 5 x .03)

If the sample size (n_o) exceeded 5% of the population size, then Cochran's correction was intended to be used to calculate the final size: $n_1 = n_o / (1 + n_o / \text{population})$; $n_1 = 266 / (1 + 266 /2193)$. The calculated sample size is $n_1 = 238$ (Bartlett, Kotrlik, & Higgins, 2001).

Instrumentation

The survey instrument (see Appendix A) was an adaptation from the FSTLA developed by the research program on Academic Programs and Students for the NCPI. Dey, co-author of the survey, granted permission for use of the survey (see Appendix B). "The [NCPI] scale reliabilities are based on a sample of seven institutions (two community colleges, one liberal arts college, two comprehensive institutions, and one research university)" (National Center for Postsecondary Improvement, 2000). By virtue

of having been validated on samples that included community colleges it was decided that the tool was acceptable for use in this study. Only full-time instructors in the system participated in the survey. Kinney, Research Manager for the Technical College System of Georgia granted permission to survey the faculty members in the Technical College System of Georgia (see Appendix C).

Section 1 of the survey instrument consisted of questions from Section 1, Subsection 8 and Section 5, Subsections 26, 31, 32, and 33 of the FSTLA developed for the NCPI (Matney, 2001). Minor modifications of the FSTLA survey questions were necessary to reflect the characteristics of technical colleges. For example, the terms *graduate students* and *undergraduate students* were replaced with the term *students*. The wording of the questions in Section 5, Subsection 26 was modified to eliminate the reference to evaluating other faculty members' feelings and thoughts. The FSTLA survey used various ranges of the Likert scale for different subsections. For greater consistency, a 1–5 Likert scale was used for all questions in this survey instrument. The wording modifications were judged not to impact the validity of the original questions because a panel of professional educational judges deemed them to be of such minor consequences as to have no impact on the interpretations.

The independent variables, departmental affiliation and pedagogical training/education, came from information supplied by the participants in the Section II of the survey.

The University of Nebraska-Lincoln Institutional Review Board for the Protection of Humans Subjects granted approval to conduct the survey (IRB #2004-11-106 EX; see Appendix D).

Variables

This study sought to determine the influence of selected factors on full-time instructional personnel (independent variables) employed by the Technical College System of Georgia. The uses of innovative-teaching practices were the dependent variables. Table 3.1 lists the variables.

Independent Variables

Independent variables were determined on the nominal/categorical scale of measurement. They were the disciplines/departments of participants and the level of professional training in pedagogical methods, self-reported by the respondents, in Section 2 of the survey instrument. Independent variable descriptions are presented below.

1. Level of pedagogical education or training that included active-learning practices: no training, faculty development training only, completion of college-credit courses, and a degree in education, which included courses in pedagogy.
2. Departmental affiliation: The departmental affiliations were determined by the departments customarily found in Georgia technical colleges. For the purpose of this study they were grouped into six categories as follows: English and social sciences (including speech, humanities, psychology, and sociology), science and mathematics, business and computer sciences, allied health and nursing, vocational/industrial and technical, and adult literacy/adult basic education.

Dependent Variables

The dependent variables were the three indices of innovative-teaching practices: (a) Introduction of new teaching practices; (b) use of specific active learning practices; (c) participation in various teaching, learning and assessment activities (designated as leading the scholarship of teaching and learning). They were determined on a ratio scale.

Table 3.1
Independent and Dependent Variables

Independent variables: faculty characteristics	Dependent variables: teaching innovations
1. Department affiliation: English and social studies science and mathematics business and computer sciences allied health and nursing vocational/industrial and technical adult literacy/adult basic education	1. Introduction of new teaching techniques 2. Active-learning practices. 3. Participating in the scholarship of teaching and learning
2. Pedagogical training and/or education that included active-learning practices. No professional training Faculty-development training only One or more college-credit courses in pedagogy A degree in education, which included courses in pedagogy	

Responses to all questions in Section 1 (Teaching Practices) of the survey instrument were made using a 5-point Likert Scale. The questions in Section 1 were grouped into 5 sets of questions designated as Subsections 1–5. Table 3.2 presents the dependent variable definitions, the corresponding survey questions, the subsection containing the questions, and the Likert scale for each subsection. The dependent variables were derived from the responses to those questions.

Table 3.2
Variable Definitions and Corresponding Survey Questions under Section 1—Teaching Practices

Participating in the scholarship of teaching and learning scores	9-item factor based on faculty self-assessment of how frequently they participated in specific activities that promote the scholarship of teaching and learning as measured by a 5-point Likert scale ranging from never to frequently. (Subsection 4.1–9). Questions 8 & 9 will be answered only by instructors with 3 or more years of teaching experience. 1. Conduct research on teaching and learning 2. Evaluate the effectiveness of new teaching and learning practices for my department 3. Help determine the performance standard for students graduating from my department 4. Assist faculty peers in their use of new teaching and learning practices 5. Make recommendations to administrative offices about new teaching and learning practices 6. Talk with colleagues regularly about ways in which we can improve our teaching 7. Have a network of colleagues with whom I discuss teaching issues 8. Evaluate faculty in their use of new teaching and learning practices 9. Make an effort to mentor junior faculty in their own teaching
Introduction of new teaching techniques	2-item factor based on faculty self-assessments of frequency of introduction of new teaching techniques (Subsections 1.9; 3.8) 1. How frequently do you introduce new or experimental teaching strategies in class as measured on a 5-point Likert scale from never to frequently. 2. In how many courses do you try new teaching practices as measured on a 5-point Likert scale from none to all.
Active-learning practices scores	7-item factor based on faculty self-assessments of the number of courses in which they use specific active-learning and innovative-teaching techniques as measured by a 5-point Likert scale ranging from never to all (Subsection 3.1–7) 1. Collect and evaluate portfolios of student work 2. Use short in-class writing exercises (e.g., 1-minute papers) to quickly assess student understanding of course material 3. Use small group work/group projects 4. Have another faculty member review my teaching for feedback 5. Use service-learning experiences 6. Require student in-class presentations 7. Use student-performance information to evaluate my own teaching 9-item factor based on faculty self-assessments of frequency of participation in various teaching, learning, and assessment activities as measured by a 5-point Likert scale ranging from never to frequently (Subsection 1.1–8) 1. Encourage students to collaborate on course work through study groups or Internet discussions 2. Ask students directly to apply course concepts to real-life situations 3. Encourage students to act as *peer mentors* to others in review or discussion sections 4. Create regular assignments that have many different correct answers or approaches

	5. Design classes to be highly interactive 6. Listen to students' concerns and take them into account in my teaching 7. Work to get students to ask questions during class 8. Expect students to guide the discussion and activities for a majority of class time
Evaluation of department concern of faculty implementing innovative-teaching-techniques scores	9-item factor based on faculty evaluation of departmental concern of faculty implementation of innovative-teaching techniques as measured on a 5-point Likert scale from not a concern to a major concern (Subsection 2.1–9) 1. New practices seem too time-consuming 2. New practices seem ill-founded or ill-researched 3. These practices are too difficult to perform well. 4. There is pressure from peers to resist new practices 5. The new practice is less effective than traditional teaching techniques 6. Following new teaching trends or fads is dangerous 7. These types of practices require giving up too much classroom control 8. New practices are too time consuming for students 9. New practices are typically dictated by the needs of administrators
Sources for learning new teaching, learning, or assessment techniques	9-item factor based on faculty self-assessments of sources for learning new teaching, learning, or assessment techniques as measured on a 5-point Likert scale from never to almost always (Subsection 5.1–9) 1. Disciplinary conferences 2. Institutional faculty-development workshops 3. Presentations by faculty in your department 4. Discussion in faculty meetings 5. A designated master teacher in your department 6. Publications in my discipline 7. General higher-education publications 8. Your students 9. Conversations with faculty colleagues

Table 3.3 shows the estimates of internal consistency using the Cronbach's alpha reliability test obtained from the NCPI survey team. Cronbach's alpha is a measure of internal consistency among items on a scale. "An alpha of .8 is generally considered to indicate good internal consistency for an index, although an alpha of .6 may be acceptable for exploratory research" (Israel, 1992, p. 3).

Table 3.3
Factor Scales: Estimates of Internal Consistencies (Cronbach's Alpha) Obtained by the NCPI Survey.

Factor scale	Items that correspond to the survey used in this study	Alpha
Participating in the scholarship of teaching and learning	2,3,4,5,6	0.73
Use active-learning practices: How frequently do you use specific active-learning and innovative-teaching techniques?	1,2,3	0.65
	4,8,9	0.68
	5,6,7	0.60
Use of active-learning practices: In how many courses do you use specific active-learning and innovative-teaching techniques?	1,2,3,6,	0.82
	4,5,7,8	0.62
Department support of faculty implementing innovative-teaching techniques	2,5,6,7	0.73
	1,8,9	0.46
Sources for learning new teaching, learning, or assessment techniques	1,2,6,7	0.69
	3,4,9	0.65
Frequency of introduction of new teaching practices	Both questions	0.70

Data Collection

A letter was sent by e-mail to all full-time faculty persons in the Technical College System of Georgia. It requested their participation in a survey on Faculty Teaching Practices and contained a copy of the Institutional Review Board approval letter from the University of Nebraska-Lincoln. The e-mail included a hyperlink to the web questionnaire and information indicating submission of the survey implied consent to participate. A follow-up e-mail letter was sent 2-weeks after the initial mailing, and a third follow-up e-mail letter was sent 2-weeks afterward in an effort to enhance the response rate

Data Analysis

The returned data was entered automatically into a Microsoft Excel spreadsheet by the survey software. Such electronic data entry helped ensure accuracy in recording data that was uploaded into a computer program for statistical analyses (SPSS). The data was analyzed using a one-way ANOVA: a parametric test to compare differences in the means on the dependent variables between the types of department affiliation (independent variables), and to compare differences in the means on the dependent variables between the levels of pedagogical training (independent variables).

To explore the possibility of an interaction between the two independent variables, department affiliation and pedagogical training, a two-factor ANOVA was used. The nature of the data and how they were measured (the independent variables are categorical, and the dependent variables are continuous) dictated the use of the two-factor ANOVA. The two-factor ANOVA was considered to be the best test to measure the interaction between two categories, in this case the two independent variables (Gravetter & Wallnau, 2000).

Tests of the assumptions for conducting the ANOVA included the Levene test, which is a test for homogeneity of variance. It was used to test for the equality of variances of groups in the ANOVA (*NIST/SEMATECH e-Handbook of Statistical Methods, 2006*). Cronbach's alpha was used to check for the reliability of each factor (Israel, 1992). Table 3.4 identifies the dependent and independent variables for each of the research subquestions and the statistical test employed to answer them.

Pilot Study

A pilot study was conducted to determine if flaws existed in the construction and delivery of the survey instrument, recording of data, and subsequent analyses, and to provide an opportunity for adjustments that might be needed to ensure that the instrument was presented optimally and the information correctly recorded. A sample (N = 200) was selected from the population of full-time faculty in Georgia's Technical College System using a random-number query. The results of the pilot study are in Appendix E.

Chapter 4 provides the quantitative results of the survey. Findings of statistical significance are detailed and explained.

Table 3.4
Research Questions, Dependent Variables, Independent Variables, and Statistical Tests

Research questions	Dependent variable	Independent variable	Section 1 survey questions	Analysis
Does departmental affiliation influence faculty members' active-learning practices scores?	Innovative teaching: Active-learning teaching and assessment practices mean scores.	Faculty member's department affiliation: 1. English and social sciences 2. Science and mathematics 3. Business and computer sciences 4. Allied health and nursing 5. Vocational and industrial technology 6. Adult literacy/adult basic education.	Active-learning teaching practices Subsection 1 (1–8) Active-learning assessment practices Subsection 3 (1–7)	Single-factor ANOVA
Does pedagogical training influence faculty members' adoption of active-learning practices scores?	Innovative teaching: Active-learning teaching and assessment practices mean scores.	Faculty member's pedagogical training What best describes your highest level of professional training in pedagogical methods that included active learning practices? 1. No professional training 2. Faculty-development training only 3. One or more college-credit courses in pedagogy 4. A degree in education, which included courses in pedagogy.	Active-learning teaching practices Subsection 1 (1–8) Active-learning assessment practices Subsection 3 Subsection 3 (1–7)	Single-factor ANOVA
Does departmental affiliation influence faculty members' participation in the scholarship of teaching and learning scores?	Innovative teaching: Participating in the scholarship of teaching and learning mean scores.	Faculty member's department affiliation. Same as listed above	Subsection 4 (1–9)	Single-factor ANOVA

Research questions	Dependent variable	Independent variable	Section 1 survey questions	Analysis
Does pedagogical training influence faculty members' participation in the scholarship of teaching and learning scores?	Innovative teaching: Participating in the scholarship of teaching and learning mean scores.	Faculty member's pedagogical training Same as listed above	Subsection 4 (1–9)	Single-factor ANOVA
How do faculty members evaluate their department's support of faculty implementing innovative-teaching practices?	Department support of faculty implementing innovative-teaching techniques mean scores.	Faculty member's department affiliation: Same as listed above	Subsection I2 (1–9)	Single-factor ANOVA
How frequently do faculty members use new active-learning teaching methods?	Innovative teaching: Introduction of new teaching techniques score.	Department affiliation	Subsection 1 (9) Subsection 3 (8)	Descriptive analysis Mean, median, frequencies, percent
How does faculty learn to use new teaching, learning, or assessment techniques?	Sources for learning new teaching, learning, or assessment techniques score.	Department affiliation	Subsection 5 (1–9)	Descriptive analysis Mean, median, frequencies, percents

Note. ANOVA = analysis of variance.

CHAPTER 4

RESULTS

Between February 24, 2009, and March 18, 2009, the survey responses were collected through the Internet survey program, SurveyMonkey.com. Requests to participate in the survey were sent to the entire full-time faculty in the Georgia Technical College System. Of 2,193 full-time faculty members in the system, 356 returned surveys but 340 were completed and used. That number exceeded the 238 usable survey sample size required to achieve a 95% confidence level. The data were downloaded into Microsoft Excel and then loaded into SPSS for detailed analysis.

Demographic Information

Descriptive statistics were calculated for all demographic data in Section 2 of the survey. The largest portion of faculty members had been employed in higher education between 2 and 5 years (n = 102), 30.0% (see Table 4.1). The highest number of years employed at an institution also was 2 to 5 years, (n = 129), 37.9% (see Table 4.2).

Table 4.1
Years Employed as a Professional in Higher Education—Frequency and Percentages

Years	Frequency	Percent
1 year or less	29	8.5
2–5 years	102	30.0
6–10 years	82	24.1
11–20 years	85	25.0
21–30 years	30	8.8
More than 30 years	12	3.5
Total	340	100.0

Table 4.2
Years Employed at This Institution—Frequency and Percentages

Years	Frequency	Percent
1 year or less	50	14.7
2–5 years	129	37.9
6–10 years	87	25.6
11–20 years	56	16.5
21–30 years	15	4.4
More than 30 years	3	0.9
Total	340	100.0

Of the 340 useable surveys, 60.9% were from females (n = 207) and 39.1% from males (n = 133) (see Table 4.3).

Table 4.3
Gender—Frequency and Percentages

Gender	Frequency	Percent
Female	207	60.9
Male	133	39.1
Total	340	100.0

Table 4.4 presents the department affiliation of the participating faculty. Faculty in vocational/technical and trade comprised the largest percentage of participants with 29.1% (n = 99), followed by allied health and nursing 25.0% (n = 85), then English and social studies 17.4% (n = 59). Returns from persons assigned to adult literacy/adult basic education gave the lowest return rate, with only 0.6% (n = 2).

Table 4.4
Teaching Departmental Affiliation—Frequency and Percentages

Department	Frequency	Percent
English and social studies	59	17.4
Science and mathematics	46	13.5
Business and computer sciences	49	14.4
Allied Health and nursing	85	25.0
Vocational/technical and trade	99	29.1
Adult literacy/adult basic education	2	0.6
Total	340	100.0

The majority of respondents (52.1%, *n* = 177) reported that a master's degree was their highest earned academic credential, followed by a bachelor's degree (19.4%, *n* = 66) (see Table 4.5).

Table 4.5
Highest Degree—Frequency and Percentages

Highest degree	Frequency	Percent
High school diploma	16	4.7
Associate's degree	44	12.9
Bachelor's degree	66	19.4
Master's degree	177	52.1
Doctoral degree	37	10.9
Total	340	100.0

Of the four levels of pedagogical training, 34.1% (*n* = 116) of respondents indicated faculty-development training only was their highest level of professional training. Having a degree in education was listed as the highest level of pedagogical training by 31.2% (*n* = 106) of the participants. Only 8.5% (*n* = 29) of the respondents indicated they had received no pedagogical training in active learning techniques (see Table 4.6).

Table 4.6
Highest Level of Professional Training in Pedagogical Methods That Included a Active Learning Techniques—Frequency and Percentages

Pedagogical training	Frequency	Percentages
No professional training	29	8.5
Faculty-development training only	116	34.1
One or more college-credit courses that included active-learning pedagogical techniques	89	26.2
A degree in education, which included courses in active-learning pedagogical techniques	106	31.2
Total	340	100.0

Faculty Teaching Practices

Careful review of the faculty members' replies to items seeking information on frequency of implementing active-learning teaching practices in the classroom disclosed that seven of the eight active-learning activities queried were addressed as having been done frequently or fairly often (Subsection 1). When queried about the number of courses in which respondents engaged in specific assessment learning activities, they reported they used the activities in none to a few of their classes in seven out of the eight responses (Subsection 3; see Tables 4.7 and 4.8).

Participants indicated that they responded to students' concerns frequently (92.1%) and were involved in getting the students to ask questions during class (92.4%). Ostensibly classes were designed to be highly interactive either fairly often or frequently (77.9%), and the instructors usually asked students to apply course concepts to real-life situations (87.6%). The respondents relied on student performance information to evaluate their teaching in almost all of the courses they taught (79.4%). Of note was that 28.3% said they fairly often or frequently expected students to guide discussions and activities for a majority of class time (see Table 4.7).

Table 4.7
Percentages of Faculty Persons Reporting Various Frequencies of Implementing Specific Active Learning Teaching Practices (Subsection 1)

	Never	Once in a while	Sometimes	Fairly often	Frequently
1. Encourage students to collaborate on coursework through study groups or Internet discussions.	3.2	12.1	24.4	30.0	30.3
2. Ask students directly to apply course concepts to real-life situations.	0.6	2.9	8.8	29.7	57.9
3. Encourage students to act as *peer mentors* to others in review or discussion sections.	5.0	12.4	24.4	35.3	22.9
4. Create regular assignments that have many different correct answers or approaches.	7.9	14.7	27.9	30.0	19.4
5. Design classes to be highly interactive.	0.9	4.1	17.1	37.6	40.3
6. Listen to students' concerns and take them into account in my teaching.	0.0	0.6	7.4	35.6	56.5
7. Work to get students to ask questions during class.	0.6	0.6	6.5	32.1	60.3
8. Expect students to guide the discussions and activities for a majority of class time.	7.9	23.2	40.6	20.9	7.4

Table 4.8
Percentages of Courses in Which Faculty use Specific Active Learning Assessment Practices (Subsection 3)

Answer options	None	One	A few	Most	All
1. Collect and evaluate portfolios of student work.	23.5	10.0	24.4	22.9	19.1
2. Use short in-class writing exercises (e.g., 1-minute papers) to quickly assess student understanding of course material.	37.9	8.8	28.2	16.5	8.5
3. Use small group work/group projects.	12.4	7.6	36.8	27.4	15.9
4. Have another faculty member review my teaching for feedback.	43.8	14.0	25.3	9.7	7.4
5. Use service-learning experiences.	27.9	6.5	28.2	23.5	13.8
6. Require student in-class presentations.	17.4	7.4	27.4	25.0	22.9
7. Use student performance information to evaluate my own teaching.	6.2	2.4	12.1	26.8	52.7

Techniques reported as having been implemented in just a single class or never employed included have another faculty member review my teaching for feedback

(57.5%), and use short in-class writing exercises to quickly assess student understanding of course material (46.7%; see Table 4.8).

Scholarship of Teaching and Learning Activities

The responses to the queries about Leading the Scholarship of Teaching and Learning that received the highest frequency (fairly often; frequently) of participation were help determine the performance standard for students graduating from my department (54.7%), talk with colleagues regularly about ways we can improve our teaching (57.9%), and have a network of colleagues with whom I discuss teaching issues (58.3%). Receiving the lowest frequencies (never; once in a while) were evaluate faculty in their use of new teaching and learning practices (62.9%), make recommendations to administrative offices about new teaching and learning practices (47.7%), make an effort to mentor junior faculty in their own teaching (46.2%), and conduct research on teaching and learning (47.3%; see Table 4.9).

Research Questions

The ANOVA tested for significant differences among means on the various survey items. The Levene statistic was used to test for the homogeneity of variance and supported the use of the ANOVA to answer Research Questions 1 to 5. The department affiliation group adult literacy or adult basic education contained only two respondents and therefore was an underrepresented group. Thus, that sample was not representative of the population and was not used for comparative purposes.

Table 4.9
Percentages of Faculty Persons in Various Leading the Scholarship to Teaching and Learning Activities (Subsection 4)

Answer options	Never	Once in a while	Sometimes	Fairly often	Frequently
1. Conduct research on teaching and learning.	18.8	28.5	20.0	14.4	12.1
2. Evaluate the effectiveness of new teaching And learning practices for my department.	20.6	20.9	22.4	17.1	12.9
3. Help determine the performance standard for students graduating from my department.	17.1	9.7	11.8	23.5	31.2
4. Assist faculty peers in their use of new teaching and learning practices.	20.6	17.4	27.9	15.9	13.2
5. Make recommendations to administrative offices about new teaching and learning practices.	25.9	21.8	27.9	9.1	9.4
6. Talk with colleagues regularly about ways in which we can improve our teaching.	4.7	14.7	19.1	28.5	29.4
7. Have a network of colleagues with whom I discuss teaching issues.	7.6	15.0	15.3	26.2	32.1
8. Evaluate faculty in their use of new teaching And learning practices.	45.3	17.6	13.5	8.5	8.2
9. Make an effort to mentor junior faculty in their own teaching.	23.8	22.4	15.6	13.8	15.9

Research Question 1

Research Question 1: Does departmental affiliation influence faculty members' adoption of active-learning practices as indicated by scores on the Faculty Survey on Teaching Practices?

The means and standard deviations for participants' active-learning teaching score (Subsection 1) by department affiliation are shown in Table 4.10. An ANOVA did not indicate a significant difference in active-learning teaching scores among faculty of various departments, $F(4, 333) = .533$, $p > .05$.

Table 4.10
Comparison of Means of Active Learning Teaching Scores (Subsection 1) Among Faculty Members From Various Departments

Department affiliation	Mean	Standard deviation	*N*
English and social studies	2.87	.56	59
Science and mathematics	2.82	.52	46
Business and computer sciences	2.86	.61	49
Allied health and nursing	2.94	.54	85
Vocational or technical and trade	2.94	.60	99
Adult literacy/adult basic education	2.63	.71	2
Total	2.90	.57	340

Note. Judgments were made on a 5-point scale (0 = never, 4 = frequently).

The means and standard deviations for participants' active-learning assessment score (Subsection 3) by department affiliation are shown in Table 4.11. An ANOVA indicated a significant difference in active learning scores (Subsection 3) among faculty of various departments, $F(4, 333) = 6.260$, $p < .001$.

Table 4.11
Comparison of Means of Active Learning Assessment Scores (Subsection 3) Among Faculty Members From Various Departments

Department affiliation	Mean	Standard deviation	*N*
English and social studies	2.19	.81	59
Science and mathematics	1.56	.68	46
Business and computer sciences	1.97	.61	49
Allied health and nursing	2.15	.81	85
Vocational or technical and trade	2.16	.81	99
Adult literacy/adult basic education	1.86	.20	2
Total	2.05	.79	340

Note. Judgments were made on a 5-point scale (0 = none, 4 = all).

A post hoc test was used to determine exactly which means were significantly different. Table 4.12 presents the Multiple Comparisons of Active Learning Scores (Subsection 3) among Department Affiliations using the TukeyHonest Significance

Difference. Tukey post hoc comparisons of the groups were interpreted to mean that the science/mathematics group (M = 1.56) scored significantly ($p < .001$) lower means than did the other three groups. Comparisons were: 1.56 versus 2.19 for the English/social studies group, 1.56 versus 2.15 for the allied health /nursing group, and 1.56 versus 2.16 for the vocational/technical and trade group. All other department-affiliation group comparisons did not prove to be statistically significant at the $p < .05$ level of confidence.

Table 4.12
Tukey Honest Significance Difference Multiple Comparisons of Active LearningAssessment Scores (Subsection 3) Among Department Affiliations

Department affiliations		Mean differences	Standard error	Significance
English and social studies	Science and mathematics	.63	.15	.00*
	Business and computer sciences	.22	.15	.56
	Allied health and nursing	.04	.13	1.00
	Vocational or technical and trade	.04	.13	1.00
Science and mathematics	Business and computer sciences	-.41	.16	.07
	Allied health and nursing	-.60	.14	.00*
	Vocational or technical and trade	-.60	.14	.00*
Business and computer sciences	Allied health and nursing	-.18	.14	.67
	Vocational or technical and trade	-.19	.13	.62
Allied health and nursing	Vocational or technical and trade	.00	.11	1.00

Note. * The mean difference was significant at the .001 level.

Research Hypothesis 1

The ANOVA for Subsection 1 output was viewed to mean no significant difference existed in active-learning teaching scores among faculty persons from the various departments. The ANOVA output for Subsection 3, however, was viewed to

mean a significant difference existed in active-learning assessment scores among faculty persons from the various departments. Therefore, Research Hypothesis 1 (no statistically significant differences exist in the use of active-learning practices among faculty members from different departments) was rejected, and the alternative hypothesis was accepted: there are statistically significant differences in the use of active-leaning assessment practices among faculty members from different departments.

Research Question 2

Research Question 2: does pedagogical training influence faculty members' adoption of active-learning practices as indicated by scores on the Faculty Survey on Teaching Practices?

A one-way ANOVA was used to test for differences in active-learning teaching scores (Subsection 1) among four levels of pedagogical training. Active-learning teaching scores differed significantly across the groups, $F(3, 336) = 6.781$, $p < .001$. The means and standard deviations for the training groups are shown in Table 4.13.

Table 4.13
Comparison of Means of Active Learning Teaching Scores (Subsection 1) Among Faculty Members With Various Pedagogical Training

Training	Mean	Standard deviation	*N*
No professional training	2.61	.59	29
Faculty-development training only	2.79	.54	116
One or more college-credit courses that included active learning pedagogical techniques	3.00	.58	89
A degree in education, which included courses in active learning pedagogical techniques	3.01	.54	106
Total	2.90	.57	340

Note. Judgments were made on a 5-point scale (0 = never, 4 = frequently).

Tukey post hoc comparisons of the four groups were viewed to mean that the no professional training group ($M = 2.61$) scored a significantly lower mean than those in the

one or more college-credit group (M = 3.00), p < .01. The no professional training group also scored a significantly lower mean than did the group with a degree in education (M = 3.01), p < .01.

The faculty development only group (M = 2.79) scored a significantly lower mean than did the one or more college-credit courses group, p < .05 and the degree in education group, p <.05. Comparisons of means between the no professional training group and the faculty-development training only groups were not statistically significant at p < .05. Comparisons of means between persons with a degree in education group and the one or more college-credit courses group also proved to be not statistically significant at p < .05 (see Table 4.14).

A one-way ANOVA was used to test for the differences in active-learning assessment scores (Subsection 3) among four levels of pedagogical training. The means and standard deviations for the training groups are shown in Table 4.15. The ANOVA output was considered to mean that the comparison of means showed a significant difference in the active-learning scores (Subsection 3), $F(3, 336) = 3.046$, $p = .029$.

Pairwise comparison of the four groups using least significant difference was viewed as indicative of the fact the no professional training group (M = 1.78) scored a significantly lower mean than did the one or more college-credit group (M = 2.12), p < .05. The no professional training group also scored a significantly lower mean than did the group with a degree in education (M = 2.19), p < .05. Also the faculty-development only group (M = 2.79) scored a significantly lower mean than did the degree in education group, p <.05. Comparisons of means between the other groups were not statistically significant at p < .05 (see Table 4.16).

Table 4.14

Tukey Honest Significance Difference Comparison of Means of Active-Learning Teaching Scores (Subsection 1) Among Faculty Members With Various Pedagogical Training

Groups		Mean differences	Standard error	Significance
No professional training	Faculty-development training only	-.1889	.11467	.403
No professional training	One or more college-credit courses that included active learning pedagogical techniques	-.3936	.11809	.005**
No professional training	A degree in education, which included courses in active-learning pedagogical techniques	-.4040	.11574	.003**
Faculty-development training only	One or more college-credit courses that included active-learning pedagogical techniques	-.2148	.07783	.031*
Faculty-development training only	A degree in education, which included courses in active-learning pedagogical techniques	-.2252	.07421	.014*
One or more college-credit courses that included active-learning pedagogical techniques	A degree in education, which included courses in active-learning pedagogical techniques	-.0104	.07940	.999

Note. * The mean difference is significant at the .05 level; ** the mean difference was significant at the .01 level.

Table 4.15

Comparison of Means of Active Learning Assessment Scores (Subsection 3) Among Faculty Members With Various Pedagogical Training

Training	Mean	Standard deviation	*N*
No professional training	1.78	.93	29
Faculty-development training only	1.95	.73	116
One or more college-credit courses that included active-learning pedagogical techniques	2.12	.79	89
A degree in education, which included courses in active-learning pedagogical techniques	2.19	.78	106
Total	2.05	.79	340

Note. Judgments were made on a 5-point scale (0 = none, 4 = all).

Table 4.16
Pairwise Least Significant Difference Comparison of Means of Active Learning Assessment Scores (Subsection 3) Among Faculty Members With Various Pedagogical Training

Groups		Mean differences	Standard error	Significance
No professional training	Faculty-development training only	-.169	.162	.298
No professional training	One or more college-credit courses that included active-learning pedagogical techniques	-.332	.167	.047*
No professional training	A degree in education, which included courses in active-learning pedagogical techniques	-.404	.163	.014*
Faculty-development training only	One or more college-credit courses that included active-learning pedagogical techniques	-.164	.110	.137
Faculty-development training only	A degree in education, which included courses in active-learning pedagogical techniques	-.235	.105	.025*
One or more college-credit courses that included active-learning pedagogical techniques	A degree in education, which included courses in active-learning pedagogical techniques	-.072	.112	.522

Note. * The mean difference is significant at the .05 level.

Research Hypothesis 2

The ANOVA output was considered to mean that a significant difference existed in active-learning mean scores (Subsections 1 and 3) among faculty persons with various pedagogical training. Therefore, Research Hypothesis 2 (no statistically significant differences exist in the use of active-learning practices among faculty members' with different levels of pedagogical training) was rejected, and the alternative hypothesis was accepted: there are statistically significant differences in the use of active-learning practices among faculty members with different levels of pedagogical training.

Research Questions 3

Research Question 3: Does a faculty person's departmental affiliation influence their involvement in activities related to activities on the scholarship of teaching and learning scores on the Faculty Survey on Teaching Practices?

The means and standard deviations for the Leading the Scholarship of Teaching and Learning Scores (Subsection 4) are presented in Table 4.17. The not applicable responses were excluded from the calculation of the means. Analysis of the output from the ANOVA test allowed for determining that the comparison of means showed a significant difference among faculty from different departments F (4, 326), p = 2.521, $p < .05$.

Table 4.17
Comparison of Means of the Leading the Scholarship of Teaching and Learning Scores (Subsection 4) Among Faculty Members From Various Departments

Department	Mean	Standard deviation	*N*
English and social studies	1.99	.98	59
Science and mathematics	1.76	.89	44
Business and computer sciences	2.09	.89	49
Allied health and nursing	2.19	.84	83
Vocational or technical and trade	1.83	.98	96
Adult literacy/adult basic education	1.60	.24	2
Total	1.98	.93	333

Note. Judgments were made on a 5-point scale (NA = not applicable, 0 = never, 3 = frequently).

A post hoc test was used to determine exactly which means were significantly different. Table 4.18 presents the Pairwise Comparisons of the Scholarship of Teaching and Learning Scores (Subsection 4) among department affiliations using Pairwise least significant difference. Pairwise post hoc comparisons of the groups led to the belief that the Allied health /nursing group (M = 2.19) scored a significantly higher mean than did

the Science/mathematics group (M = 2.09), $p < .05$ and the Vocational/technical and trade group (M = 1.83), p = .01. All other department-affiliation group comparisons did not prove to be statistically significant at the $p < .05$ level.

Table 4.18
Pairwise Least Significant Difference Comparison of Means of the Scholarship of Teaching and Learning Scores (Subsection 4) Among Faculty Members From Various Departments

Department affiliations		Mean differences	Standard error	Significance
English and social studies	Science and mathematics	.231	.184	.209
	Business and computer sciences	-.104	.178	.562
	Allied health and nursing	-.199	.157	.207
	Vocational or technical and trade	.161	.153	.293
Science and mathematics	Business and computer sciences	-.335	.192	.082
	Allied health and nursing	-.430	.172	.013*
	Vocational or technical and trade	-.070	.168	.675
Business and computer sciences	Allied health and nursing	-.095	.166	.568
	Vocational or technical and trade	-.264	.162	.104
Allied health and nursing	Vocational or technical and trade	.359	.138	.010*

Note. * The mean difference is significant at the .05 level.

Research Hypothesis 3

The ANOVA output led to saying that a significant difference existed in the scholarship of teaching and learning scores (Subsection 4) among faculty members with various departmental affiliation. Therefore, Research Hypothesis 3 (no statistically significant differences exist in faculty involvement in activities related to the scholarship of teaching and learning as a consequence of a participant's departmental affiliation) was rejected, and the alternative hypothesis was accepted: there are statistically significant

differences in faculty involvement in activities related to the scholarship of teaching and learning as a consequence of a participant's departmental affiliation.

Research Question 4

Research Question 4: Does a faculty person's pedagogical training influence their involvement in activities related to activities on the scholarship of teaching and learning scores on the Faculty Survey on Teaching Practices?

A one-way ANOVA was used to test for differences in the Leading the Scholarship of Teaching and Learning Scores (Subsection 4) among four levels of pedagogical training. Active-learning scores differed significantly across the groups, F (3,329) = 4.103, $p < .01$. The not applicable responses were excluded from the calculation of the means. The means and standard deviations for the training groups are shown in Table 4.19.

Table 4.19
Comparison of Means of the Leading the Scholarship of Teaching and Learning Scores (Subsection 4) Among Faculty Members With Various Pedagogical Training

Training	Mean	Standard deviation	*N*
No professional training	1.50	1.22	27
Faculty-development training only	1.90	.88	114
One or more college-credit courses that included active learning pedagogical techniques	2.17	.86	86
A degree in education, which included courses in active-learning pedagogical techniques	2.02	.91	106
Total	1.97	.93	333

Note. Judgments were made on a 5-point scale (NA = not applicable, 0 = never, 3 = frequently).

Tukey post hoc comparisons of the four groups were seen to mean that the no professional training group (M = 1.50) scored a significantly lower mean than did the one or more college-credit groups (M = 2.17), $p < .01$. The no professional training group also scored a significantly lower mean than did the group with a degree in education (M = 2.02), $p < .05$. Comparisons of means between the other groups were not statistically different at the $p < .05$ level (see Table 4.20).

Table 4.20
Tukey Least Significant Difference Comparison of Means of the Scholarship of Teaching and Learning Scores (Subsection 4) Among Faculty Members With Various Pedagogical Training

Groups		Mean differences	Standard error	Significance
No professional training	Faculty-development training only	-.400	.196	.175
No professional training	One or more college-credit courses that included active-learning pedagogical techniques	-.674	.202	.005*
No professional training	A degree in education, which included courses in active-learning pedagogical techniques	-.517	.197	.045**
Faculty-development training only	One or more college-credit courses that included active-learning pedagogical techniques	-.274	.131	.158
Faculty-development training only	A degree in education, which included courses in active-learning pedagogical techniques	-.117	.124	.779
One or more college-credit courses that included active-learning pedagogical techniques	A degree in education, which included courses in active-learning pedagogical techniques	.157	.133	.641

Note. * The mean difference is significant at the .01 level; ** the mean difference is significant at the .05 level.

Research Hypothesis 4

The results from an ANOVA was interpreted to mean that a significant difference existed in the scholarship of teaching and learning score (Subsection 4) among faculty persons with various levels of pedagogical training, $F(3,329) = 4.103$, $p < .01$. Therefore, Research Hypothesis 4 (no statistically significant differences exist in faculty involvement in activities related to the scholarship of teaching and learning among faculty members' with different levels of pedagogical training) was rejected, and the alternative hypothesis was accepted: there are statistically significant differences in faculty involvement in activities related to the scholarship of teaching and learning among faculty members with different levels of pedagogical training.

Research Question 5

Research Question 5: How do faculty members evaluate their department's support of faculty implementing innovative-teaching practices?

A one-way ANOVA was used to test for differences in how faculty persons from various departments evaluated their respective departments' support of faculty implementing innovative-teaching practices (Subsection 2). No significant differences in means were found among the different departments, $F(4, 333)$, $p = 2.200$, $p > .05$. Table 4.21 presents the means and standard deviations for the department groups.

Table 4.21
Comparison of Means of the Faculty Evaluation of Department Support Scores (Subsection 2) Among Faculty Members From Various Departments

Department	Mean	Standard deviation	*N*
English and social studies	1.16	.61	59
Science and mathematics	1.30	.60	46
Business and computer sciences	1.44	.67	49
Allied health and nursing	1.21	.68	85
Vocational or technical and trade	1.12	.68	99
Adult literacy/adult basic education	1.61	.70	2
Total	1.22	.66	340

Note. Judgments were made on a 5-point scale (0 = not a concern, 4 = a major concern).

Research Question 6

Research Question 6: How frequently do faculty members use new active-learning teaching methods?

Descriptive analyses from two survey questions were assessed to answer this research question. The responses to the frequencies of introduction of new teaching practices revealed, while over half (56.7%; *N* = 193) tried new teaching strategies in most or all of their courses, only 40.9% (*N* = 139) designated the frequency of introduction of new strategies to their classes as having been fairly often or frequently (see Tables 4.22 and 4.23).

Table 4.22
Percentages of Courses in Which Faculty Introduce New Teaching Practices

	None	One	A few	Most	All
In how many of your courses do you try new teaching practices?	2.1%	4.4%	36.8%	29.1%	27.6%
	(7)	(15)	(125)	(99)	(94)

Table 4.23
Percentages of Faculty Reporting Frequencies of Introduction of New Teaching Techniques

	Never	Once in a while	Sometimes	Fairly often	Frequently
How frequently do you introduce new or experimental teaching strategies in class?	2.4%	18.8%	37.9%	27.1%	13.8%
	(8)	(64)	(129)	(92)	(47)

Research Question 7

Research Question 7: How do instructional faculty members learn to use new teaching, learning or assessment techniques? Descriptive analysis was used to assess this research question (see Table 4.24). The most popular method of learning new techniques was conversations with faculty. It was indicated frequently or almost always by 50.9% (*N* = 173) of respondents. Learning techniques from students was the second most common method garnering 45.6% (*N* = 155) of frequently/almost always responses. Learning techniques from disciplinary conferences was less used (70.0%, *N* =238), never; once in a while). Three-fourths (75.6%, *N* = 257) of the respondents indicated they never or only once in a while relied on a designated master teacher in their department to learn new techniques.

Table 4.24
Percentages of Faculty Persons Reporting How They Learn to Use New Teaching, Learning, or Assessment Techniques

	Never	Once in a while	Sometimes	Frequently	Almost always
Disciplinary conferences	46.8	23.2	17.9	9.7	2.4
Institutional faculty-development workshops	12.4	23.2	33.2	27.1	4.1
Presentation by faculty in your department	26.2	30.3	25.9	16.2	1.5
Discussion in faculty meetings	17.4	22.1	31.5	25.6	3.5
A designated master teacher in your department	63.2	12.4	12.1	9.4	2.9
Publications in your discipline	16.2	20.0	23.5	29.1	11.2
General higher education publications	19.1	25.3	27.9	19.7	7.9
Your students	7.4	17.9	29.1	32.4	13.2
Conversation with faculty	3.2	14.7	31.2	40.0	10.9

To explore the possibility of an interaction between the two independent variables, department affiliation and pedagogical training, a two-factor ANOVA was used. The two-factor ANOVA did not indicate an interaction between the two independent variables, $F(11, 312) = 1.802$, $p > .05$.

Chapter 5 contains discussion and implications of the results

CHAPTER 5

DISCUSSION

Introduction

The purpose of this quantitative research was to examine the influence of faculty department affiliation and pedagogical training on the adoption of innovative pedagogical practices by instructors in the Technical College System of Georgia. The central question of this study was, Does technical college departmental affiliation and personal pedagogical training/education influence a faculty person's use of innovative-teaching and -learning practices?

Discussion of Findings

Innovation in teaching was measured by three dependent variables: active-learning practices, participating in the scholarship of teaching and learning, and introducing new teaching techniques. A discussion of the differences between these behaviors, as expressed by the participants, follows.

Effects of Departmental Affiliation on Active Learning Teaching Practices

Subsections 1 and 3 of the survey queried faculty on their use of active-learning practices. Subsection 1 asked participants how frequently (never to frequently) they used eight specific active-leaning teaching techniques. In 6 of the 8 questions more than half (205/314) of the instructors responded they used the techniques identified between fairly often and frequently. Subsection 1 techniques emphasized students as active participants in their learning. Those activities included encouraging students to collaborate in groups or internet discussions, acting as peer mentors, applying concepts to real-life situations, and designing class to be highly interactive.

Technical-college instructional personnel are encouraged to use student-centered techniques. The results of this investigation confirmed that the faculty persons responding to the survey believed they frequently selected pedagogical techniques that encouraged students to be active learners. Although science/mathematics instructors scored lowest in using active-learning techniques, there was no significant difference among the different departmental affiliations in frequency of incorporation of identified teaching methods. Overall the faculty persons in this study were highly inclined to include active-learning techniques in their teaching. Importantly, respondents volunteered to participate and the information employed in the various analyses was self-disclosed. Thus there existed a potential for any or many parts of the data to have been less than candid information, and if so then the scrutiny and interpretations become vulnerable.

The responses from Subsection 3 netted different results. This section asked instructors to indicate the number of courses in which they had incorporated seven specific types of active-learning assessment activities. In only one of the seven areas (use student performance information to evaluate my own teaching) did the instructors say they had used the techniques in most or all of their classes. The active-learning assessment techniques listed in Subsection 3 pertained to student-centered learning assessments such as service learning, student in-class presentations, group projects, student portfolios, and in-class writing assignments. The instructors indicated they were much less likely to use these techniques than the type of learning techniques indentified in Subsection 1.

A post hoc comparison of groups revealed that there was a significant difference among the faculty members from different departmental affiliations. Specifically, the

science/mathematics group scored significantly lower means than did the English/social studies, allied health/nursing and vocational/technical and trade groups.

This information was interpreted to mean that although Georgia Technical College faculty members frequently implemented active-learning teaching techniques, they were less likely to incorporate active-learning assessments. Faculty departmental affiliation did have a significant impact on their decisions to use active-learning assessments, with science/mathematics instructors' participation mean scores being significantly lower that the other groups.

Such finding were supported earlier by Lindblom-Ylanne et al. (2006), who contended the instructors of pure hard disciplines such as science and mathematics scored significantly lower on the CCSF scale than did persons engaged in providing learning guidance to students in the pure soft and applied soft groups. H. Murray and Renaud's (1995) research revealed that faculty persons in science and mathematics areas were less likely to exhibited behaviors that sponsored student participation than were instructors in other disciplines. The research reported in the literature had been conducted primarily at 4-year institutions whereas the present study was limited to technical colleges. Matney (2001) concluded that humanities/social studies instructors were more inclined to use active-learning techniques and introduce new techniques than were their mathematics/science colleagues. Matney's research included 2-year colleges as well as 4-year institutions. Matney used the FSTLA developed by the research program on Academic Programs and Students for the NCPI. This was the survey was adopted for use for this study. Importantly, the similarities among the reported findings and conclusions

reached from the current investigation seem to reinforce the generalizations on how instructors from selected disciplinary areas approach their teaching responsibilities.

The research by Portmann (2000), Portmann and Stick (2003), and Dempsey (2006) involved only technical community-college faculty, therefore the population of their studies were more similar to the population of this study. Those studies explored the relationship between discipline and curriculum design. The results reported were that discipline affiliation did have a significant impact on faculty curriculum-design choices. Thus there appeared to be adequate evidence to support the conclusions made above as they pertain to the findings from this investigation.

Effects of Departmental Affiliation on the Leading the Scholarship of Teaching and Learning Practice

Questions in Subsection 4 of the Faculty Survey evaluated the faculty members' participation in the Scholarship of Teaching and Learning. Because the mission of a technical college focuses on teaching, its instructors typically are not involved in what has been considered to be conventional scholarship. Although 47.3% (N = 161) of the instructors indicated they never or only once in a while conducted research on teaching and learning, a surprising 26.5 % (N = 90) indicated they conducted research fairly often to frequently.

Palmer's (2002) review of data from the 1999 National Survey of Postsecondary Faculty revealed that 33 % of 2-year college instructors claimed to have participated in professional research. Palmer's definition of research was not limited to the scholarship of teaching and learning but included creative writing, proposal writing, and creative works. The report from Palmer gives credence to the results from the current study; that

research, particularly in the area of teaching and learning is not the sole providence of the 4-year colleges and universities.

The remaining activities seeking data on participation of faculty in the Scholarship of Teaching and Learning were divided into three areas of scholarship: improving the teaching of others, improving personal teaching, and participating in a leadership role in the department.

Activities related to improving the teaching of others included the following: assisting faculty peers in their use of new teaching and learning practices, evaluating faculty in their use of new teaching and learning practices, and making an effort to mentor junior faculty on teaching. Activities related to improving personal teaching activities and behaviors included talking with colleagues regularly about how to improve teaching, and having a network of colleagues with whom to discuss teaching issues. Activities related to a departmental leadership role in the Scholarship of Teaching and Learning included evaluating the effectiveness of new teaching and learning practices for the department, helping to determine performance standards for students being graduated from the department, and making recommendations to administrative offices about new teaching and learning practices.

Faculty members evidenced the greatest degree of participation 58% (fairly often to frequently) in the area of improving their own teaching (N = 197). A commonly employed approach was use of an informal network of colleagues to discuss methods for improving teaching practices. The more formal methods for evaluating colleagues' teaching were used markedly less often; rarely (never to once in a while) evaluated other faculty (62.9%, N = 214), mentored junior faculty (46.2%, N = 157), or assisted faculty

peers (38%, *N* = 129) in the use of teaching and learning practices. Also, participation in a departmental-leadership role in the scholarship of teaching and learning was infrequent; rarely (never to once in a while) evaluated the effectiveness of new teaching and learning practices for their department (41.5%, *N* = 141) or made recommendations to institutional administrative personnel about new teaching and learning practices (47.7%, *N* = 162). On a positive note, more than half (54.7%, *N* = 186) of the instructors said they helped determine the performance standard for students graduating from their respective departments on a basis that was fairly often to frequently.

In summary, the technical-college faculty members' participation in the Scholarship of Teaching and Learning was limited, and dealt mainly with improving their own teaching methods through informal interactions with colleagues. There was limited involvement (much less frequently) in the more formal or structured methods such as direct research, formal evaluation of peers, and taking a leadership role in promoting teaching and learning strategies.

Given that teaching and learning is the primary focus for technical colleges it was surprising that their culture did not give appreciable consideration to activities directed toward the promotion of improved teaching and student learning, but perhaps it is a situation endemic to such postsecondary institutions because of how their instructional faculty are comprised, the existing culture, and the attendant responsibilities of such instructors. Instructors interested in improving their teaching and student learning usually sought colleagues for advice and assistance, and hence it was viewed as more of an informal approach to resolving such issues.

Notably they did not take a leadership role in promoting the scholarship of teaching and learning to other faculty or in their respective departments. Such reluctance to fully participate and promote the scholarship of teaching and learning was lamented by Prager (2003). He contended that faculty scholarly pursuits at community colleges were valid and to ignore those efforts for improving instructional practices and enhancing student learning has proven to be a disservice to the community college. As pointed out in the above paragraph, it is conceivable that the prevailing culture at such institutions has not been to critically address the practice of teaching and thus make it an art form. Compounding such apathy has been the customary assignment of teaching loads that correspond to 18–21 per term (oftentimes six to seven courses) and thus instructional personnel tend to be overwhelmed with responsibilities that preclude engaging in scholarship of teaching and learning.

Analysis of the survey data from Subsection 4 on Leadership in the Scholarship of Teaching and Learning revealed a significant difference in means among the participants according to home units. A pairwise comparison among the groups allowed for claiming that the allied health/nursing group scored a significantly higher mean in participation in the Scholarship of Teaching and Learning than did persons from the science/mathematics and the vocational/technical and trade groups. That finding contradicted Lueddeke's (2003) conclusions from work done at universities in the United Kingdom. Lueddeke said that while the disciplinary affiliation of a faculty member significantly influenced a person's approach to the scholarship of teaching, the nursing and technology instructors scored much lower than did persons affiliated with business and social studies. Importantly, his definition for the Scholarship of Teaching and Learning was different

from that used in the current research so perhaps it is not justified to make a direct comparison of the findings. It can be stated, however, that both studies allowed for claiming that departmental affiliation had an influence on the extent to which a person participated in the Scholarship of Teaching and Learning.

Effects of Pedagogical Training on Active Learning Teaching Practices

In the current study, faculty members indicated their highest level of pedagogical training in active learning practices as no professional training, faculty-development training only, one or more college-credit courses that included active-learning pedagogical techniques, and a degree in education that included courses in active-learning pedagogical techniques. The largest percent (34.1%, $N = 116$) of participants listed faculty development as their only source of pedagogical training in active-learning techniques. A degree in education, including courses in active-learning pedagogical techniques, had the second highest results (31.2%, $N = 106$). A total of 26.2% ($N = 89$) reported their highest level of training in active-learning pedagogical techniques to be one or more college-credit courses. Only 8.5% ($N = 29$) had no professional training in content related to active learning..

Subsection 1 of the survey asked the participants how frequently (never to frequently) they used eight specific active-learning techniques. An analysis of the data indicated there were significance differences in means among the levels of training and the active-learning scores in Subsection 1. A Tukey post hoc comparison allowed for stating that those who received no professional training and those that had only faculty development in active-learning pedagogy scored significantly lower means than did persons that received training in one or more college courses, and also than persons with

a degree in education. Interestingly, there was no significant difference in means between those with no training and those with only faculty-development training. Also, there was no significant difference in means between those with college courses and those with a degree in education. Therefore, it was concluded that taking one or more college courses in active-learning pedagogy had the greatest impact on instructors' proclivity to use such practices in their respective classrooms.

Subsection 3 of the survey questioned participants about the number of courses into which they had incorporated active-learning techniques relating to student assessment. Analysis of data from a one-way ANOVA revealed a significant difference among the mean scores of the training groups. A pairwise comparison was interpreted to mean there was a significant difference in means between those with no professional training and those with one or more college courses, and also persons with a degree in education.

The mean scores from the faculty-development-training group were lower than those from persons with college courses and an educational degree, but there was no significant difference in means between faculty-development training only and the other training groups. Those results were slightly different from the results reported from Subsection 1. Having some form of training did make a difference in incorporating active-learning assessment into courses, however the extent of the training did not have a notable impact.

These findings supported the earlier work by Postareff et al. (2007), especially Gibbs and Coffey's (2004) contention that pedagogical training did promote a change toward more student-centered teaching focus. Postareff et al. noted that any improvement

in the effectiveness of participants' teaching was a slow process and required a least a year or more of training. Ostensibly that period of time was needed to allow an instructor to reconsider instructional behaviors and practices and then make a cognitive adjustment that resulted in a shift toward more student-centered teaching.

Data from Gibbs and Coffey's (2004) research also supported the claim that teacher training could improve instructional practices by encouraging adoption of a more student-focused approach to teaching and student learning. Using eight universities in the United Kingdom, those authors studied the length of teacher-training programs that varied over a period of 4 to 18 months, but the constant factor was that each provided at least 60 hours of such training. Apparently the exposure and cultivation of reflection on practices was the pivotal issue for those instructors and not the duration of program length.

The research by Norton et al. (2005), however, netted conflicting results. Those authors determined that instructional faculty participating in an institutional-sponsored training program did not evidence appreciable change in their teaching behaviors regardless of the time involved for such instructional activities. That study might be suspect because it was done using a single institution and there were no explanations provided regarding the nature or degree of the training program.

The results of this study supported the earlier work by Postareff et al. (2007) and Gibbs and Coffey (2004), especially in that training, especially when conducted over a reasonable period of time, does cultivate a perceived change toward being more student focused in teaching methods. Completing one or more college courses in active-learning pedagogy would have involved training over a longer period of time than a faculty-

development training session of a few hours or a few days and would seem to be more desirable for creating a different mindset toward how to practice pedagogy.

Effects of Pedagogical Training on the Leading the Scholarship of Teaching and Learning Practices

Analysis of the data from the one-way ANOVA from Subsection 4 of the Faculty Survey revealed a significant difference in means among the faculty with different pedagogical training levels. A Tukey post hoc comparison was interpreted to mean that the no professional training group scored significantly lower means than did persons reporting one or more college-credit courses and those with a degree in education. Although the faculty-development training group also scored lower means than these two groups, the difference was not significant.

It was concluded that faculty members' participation in the scholarship of teaching and learning was appreciably less common if they had no professional training in active-learning teaching strategies. It also confirmed the belief that those persons typically do not have the tools needed to become leaders in the promotion of innovative-teaching techniques. In a sense, this is a circular form of discussion.

As teaching and learning is the primary mission of the technical college it is imperative that the faculty be trained in active-learning strategies. Participation in the Scholarship of Teaching and Learning ensures that instructors are continuously evaluating and improving their techniques to meet the needs of today's ever-changing student body. Classroom-centered research, mentoring junior faculty, observing and evaluating one's peers and promoting innovative-teaching and -learning strategies in the department are methods that promote the Scholarship of Teaching and Learning.

Both Prager (2003) and Ford (1999) lamented the lack of scholarship in community colleges. Prager contended that scholarly pursuits at community colleges were valid and to ignore those efforts for improving instructional practices and enhancing student learning has proven to be a disservice to the community-college community. Ford addressed the need to encourage instructors to go beyond conventional teaching and consider alternative delivery methods, but concomitantly to think about how the instructional methods become disclosed as student outcomes. It seems evident that 2-year colleges are prime sites for research into improvement in all areas related to teaching and learning, and the findings from this investigation can be considered to be indicative of a dearth of such activities.

Evaluation of Department's Support of Faculty Persons Implementing Innovative Teaching Practices.

Subsection 2 questions were designed to query the respondents on evaluation of their respective departments' support for innovative-teaching practices. For example, they rated their department's concerns about implementing new practices being too time consuming, too difficult, and less effective than traditional teaching methods. There was no significant difference among the faculty instructors from different departments in how they judged their departments' support for innovative-teaching practices.

This finding was deemed to mean that the earlier reported significant differences in the implementation of active-learning techniques according to department affiliation was not attributable to concerns on behalf of respective departments. Instead it is postulated that the attitude was one of indifference. As noted in the results of the section on the Scholarship of Teaching and Learning, there was little involvement at a

departmental level for activities related to improving and advancing teaching and learning methods.

How Faculty Learns to Use New Teaching, Learning, and Assessment Techniques

The highest rated method for learning new instructional techniques was conversations with other instructional faculty, and it tended to be of an informal nature. That finding supported the earlier statement that a majority of the participants claimed they discussed teaching issues and ways to improve their own teaching with their colleagues. Of note was that input from students as a method of improving teaching also was ranked highly.

Methods that involved use of departmental support consistently were ranked low. For example, presentations by colleagues in a department, disciplinary conferences, and a designated master teacher in a department were assigned the lowest ratings in the section on learning to use new teaching, learning, or assessment techniques. That coincided with earlier reported results from this survey that the departments were not a source of discouragement but neither were they a source for advancement or encouragement of faculty participation.

Summary of Findings and Relationship to Theoretical Framework

Stark and Lattuca's (1997) "contextual filters model of course planning" served as the theoretical framework for this research (see Figure 2.1). The model was composed of three areas: content (key factors in course planning), context (influences on course planning), and form (the final course plan). This model illustrated numerous factors that influence instructors' decision making during the process of course planning. This study

chose to isolate two of those key factors—discipline and pedagogical training—and focus on their impact to the planning process.

The key factors are grouped into three areas: faculty background and characteristics, faculty views of their academic fields, and purposes of education as espoused by faculty. Stark (2002) concluded that of the three key factors, “clearly, discipline is the key predictor of classroom goals and beliefs about education while other factors have a much smaller influence” (p. 132). As illustrated in the model, faculty views of their academic fields influenced their purposes of education. When making decisions about course strategies, instructors applied their purpose of education, strongly defined by the instructor’s disciplinary affiliation, and filtered it through various influences listed in the contextual filters. The influence of the contextual filters was much less effectual than the beliefs based on disciplinary views. Pedagogical training, also listed as one of the key factors in faculty background and characteristics did not prove as powerful an influence as academic field. ”Less than one-third of college teachers reported that pedagogical training had an influence” (Stark, p. 131).

This study chose to focus on two important areas in the Content and Background Considerations, department (faculty views of their academic field) and pedagogical training (faculty background characteristics). According to the model these factors greatly influence the instructors’ espoused purpose of education. When faculty selects learning activities for a course, they do so by filtering their views through certain external influences. This research did not address the influence of the contextual filters in this model of the course-planning decision-making process. Stark (2002) described the

influence of these external contextual filters as modest, and therefore these influences were not considered in this study.

Using survey research, this investigation addressed two aspects of the Stark and Lattuca (1997) model—department affiliation and pedagogical training—and how each impacted an instructor's selection of innovative-teaching and -learning activities. The premise was that an instructor's decision-making process, as defined by the model, included how a person viewed their discipline and the person's level of pedagogical training as it related to the selection of teaching and learning activities/strategies.

Because in Stark and Lattuca's (1997) "contextual filters model of course planning" faculty views of their academic field were considered a key factor in determining course-planning decisions, one would predict that instructors' department affiliation would make a difference in the type and frequency of use of student-centered learning techniques. This study found that there was a significant difference in the selection of student-assessment techniques. Likewise the scores for participation in the Leadership in the Scholarship of Teaching and Learning revealed a significant difference in means among persons from different departments. Department affiliation, however, did not prove to make a significant difference in selecting active-learning techniques listed in the survey. Although the faculty view of their academic field did influence at least two of the three areas of innovative-teaching (learning assessment and Scholarship of Teaching and Learning) the impact may not have been as powerful as Stark and Lattuca discovered in their research. Perhaps this could be partially attributed to demographics of the instructors in this study (technical-college faculty only).

The influence of pedagogical training in active-learning practices also conformed to the contextual filters model as it played a key factor in planning course teaching and learning strategies. There were significant differences among levels of training, and notably there was a negative impact for those with no professional training. The impact of pedagogical training on instructors' selection of learning activities appeared to be greater than what Stark and Lattuca (1997) discovered in their research. This could be attributed to the differences in the faculty populations used for the studies.

Thus it is claimed that for the community-college instructors participating in this research, professional disciplines and levels of pedagogical training on active learning were intrusive when making choices about the use of active-learning assessment and activities related to the scholarship of teaching and learning. Importantly, the impact of local departments did not rise to the level of the individuals' pursuit for professional improvement. That was an endorsement of earlier work by Matney (2001, p. 96) who reported "an internal drive to gain more knowledge about teaching and learning" to be more powerful than external incentives such as the influence of instructors' departments.

Discussion of Validity of Survey Questions

The dependent variables were measured by replies to survey questions developed from the FSTLA conducted by the NCPI. The estimates of internal consistencies (Cronbach's alpha) obtained by the NCPI are listed in Table 3.3. With the exception of three questions in Subsection 2 (department support of faculty implementing innovative-teaching techniques) with an alpha of .46. The Cronbach's alpha range was .62–.82. Although Cronbach's alpha scores in the .70s and above are the most desirable to indicate good internal consistence, alpha findings of .60s are considered acceptable for

exploratory research (Israel, 1992). The NCPI data was based on a sample of seven institutions, only two of which were community colleges. The remaining institutions were 4-year colleges and universities. The Cronbach's alpha test for reliability obtained with the pilot study I conducted in Georgia's technical colleges ranged from .67–.83.

Consideration was given to the two independent variables—department affiliation and pedagogical training—to determine if there was a possibility of the dependent and independent variables being spuriously correlated and thus enabling the nulls to be rejected. Due to the various natures of the different disciplines, a few of the survey questions might have been considered more applicable to certain departments than others. In reviewing the survey questions the following questions were further evaluated for a possible bias toward certain departments:

Subsection 1—Active Learning Teaching Techniques

Questions in Subsection 1 (with the exception of Question 8 mentioned below) were inherently biased toward certain disciplines or departments. Although available literature was viewed to mean that instructors in the soft disciplines traditionally were more inclined to use those types of student-centered active-learning techniques than instructors of hard disciplines, the type of teaching practices queried in Subsection 1 could be effectively incorporated into both hard and soft discipline courses. Question 8 is the only question warranting further investigation to determine any possible bias toward or against specific departments.

Question 8 asked if instructors expected students to guide the discussion and activities for a majority of class time. In courses such as mathematics and science as well as certain trade/technology and allied health this technique might not be considered

practical as perhaps in social studies or English classes. The analysis of data from this section (Subsection 1) of questions about active-learning teaching practices was considered to mean there was not a statistically significance difference among departments; therefore the null hypothesis was accepted.

Subsection 3—Active Learning Assessment Techniques

It was believed that those techniques, while typically used more often by soft disciplines than hard disciplines, were not inherently biased toward any one discipline. To further scrutinize this issue, Question 8 might have had inherent bias and was designated for additional analysis. The other survey question subsections were of a general nature and determined to be benign regarding possible differences in disciplines.

Question 1 asked instruction how frequently they collect and evaluate portfolios of student work. In some hard courses such as mathematics and trade and technology the student portfolios probably were not common assessment tools. That did not mean hard courses were not amenable to portfolios as assessment tools, because students in those and similar disciplines could produce portfolios of their work projects reflecting certain skills; allied health students could produce portfolios of their clinical experiences; mathematics portfolios could contain examples of student problem solving.

Correlation Between Questions and Pedagogical Training

The possibility of a correlation of the independent variable—level of pedagogical training—and dependent variables also was explored. There was the possibility that instructors with limited pedagogical training used some or all of the techniques and assessments mentioned but did not respond as such on the survey because they were not familiar with the terminology. After reviewing all the survey questions, it was determined

that only two questions contained specific pedagogical terminology that warranted further scrutiny.

Instructors were asked how often they collect and evaluate portfolios of student work (Subsection 3, Question 1) It was presumed that most instructors would understand this question, but on reflection it was concluded that some might not be familiar with how the concept of portfolios would be applied in the classroom.

Instructors were asked how often they use service-learning experience (Subsection 3, Question 5). The term service-learning might not have been familiar to all instructors.

Because these two questions were the only questions out of eight that were identified as possibly containing a bias, and coupled with the small number of instructors to which this exception might apply, it was concluded that any bias effect would be too small to warrant concern for the validity of results.

Implications for Practice

This study provided insight into the influence of department affiliation and pedagogical training on adoption of innovative-teaching techniques by instructional faculty working in the Georgia Technical College System. The results have implications for both formal and informal faculty-development programs and opportunities. The results were interpreted to mean that participants oftentimes developed an informal network of colleagues with whom they discussed teaching practices, because local departments were not noted for being sources of stimulatation or support for such efforts. It would seem prudent for institutions to consider diverting resources, despite their scarcity, toward developing faculty-mentoring programs, and creating opportunities for

personnel to meet for the explicit goal of sharing and discussing ideas for the improvement of teaching and student learning.

The absence of a departmental profile in encouraging improvements for instructional practices and student learning was considered to be a lost opportunity. Also, of note was the fact that department affiliation influenced adoption of active-learning-based student assessment. Science and mathematics instructors were less likely to incorporate such methods. An extrapolation is that course-development designers should plan programs that introduce student-centered, active-learning assessment ideas tailored specifically to meet the needs of instructors in given disciplinary areas, and they should be cognizant of the fact that disciplinary prejudices seem to exist.

The research also provided valuable information about the impact of pedagogical training in active-learning practices. In the use of active-learning practices and student-centered assessment, persons with no relevant professional training scored markedly lower than did persons with training, and even the presence of having completed a single college course on such issues was important for coloring favorable attitudes toward active-learning practices Evidence from available literature endorsed findings from this research that such training had to be of at least a given duration to be effective and not somewhat capricious. Prescribing specific durations of training was beyond the boundaries of this research; however it might be a viable topic for study.

In summary, this research allowed for claiming that department affiliation and pedagogical training impacted the participants' scores on the Leadership in the Scholarship of Teaching and Learning survey. Nursing and allied health instructors scored significantly higher than did those from the science/mathematics and the

vocational/technical and trade groups. The no professional training group scored significantly lower than persons who reported having had some college courses in the area and those with a college degree in education.

Therefore the following implications for practice are recommended, not restricted to personnel working in community-college or technical-college environments:

1. Provide opportunities for instructional faculty to meet informally with colleagues to share ideas for teaching and learning improvement.
2. Encourage involvement in the improvement of teaching and learning at the department level.
3. Promote mentoring of junior faculty in a department.
4. Approach faculty-development planning from a disciplinary perspective.
5. Plan faculty-development programs on active learning over a semester or two with follow-up sessions over several semesters after an initial program.
6. Recognize that there is a disciplinary bias toward instructional practices and that not all disciplines lend themselves to following the same approaches to teaching and learning. In fact, some disciplines might need to be presented in ways that are appreciably different, such as modern dance versus English or history.

Recommendations for Further Research

This study provided information that supported and was supported by published literature on how instructors' department affiliation and pedagogical training influence their adoption of innovative-teaching practice. All participants were full-time employees

in the Technical College System of Georgia. Data derived from the survey was the only source of information and it must be recognized that it was perceptual from the perspective of participants. Future research should seek to use data drawn from a variety of sources such as faculty interviews, student interviews and/or surveys, and direct observations. This study was not designed to explore the relationship between student learning and faculty use of innovative-teaching strategies, leaving that as an area for further research. Recommendations for further study include the following:

1. Replicate the study on a similar group of institutions in other states.
2. Replicate the study at 4-year institutions.
3. Investigate students' perception of faculty adoption of innovative-teaching practices.
4. Investigate the relationship between student learning and faculty use of innovative-teaching strategies.
5. Evaluate faculty adoption of innovative-teaching and -learning practices through in class observations.
6. Design the research to include interviews with faculty and/or students.
7. Revise the survey to include additional types of active-learning techniques and assessments.
8. Investigate other factors that may influence faculty adoption of innovative-teaching practices.
9. Do a meta-study that compares findings from most of the relevant literature cited in this report and include the data reported from this investigation. Searching for commonalities and differences could yield

findings that maintain sufficient strength to be considered as facts or perhaps identification would be made of differences in research methods that led to variations in reports.

Conclusion

The results from this study provided evidence that the instructional faculty of Georgia's Technical Colleges variously incorporate innovative-teaching practices in their classrooms. Respective departments typically did little to advance the introduction of active teaching and learning. Department affiliation did not significantly impact use of active-learning teaching strategies, however faculty use of active-learning assessment techniques was influenced by department affiliation. The findings also revealed that there was reliance on informal networks of peers to discuss methods to improve teaching and learning rather than to depend on or expect formal supports.

Pedagogical training in active-learning techniques had a significant and positive influence on the use of active-learning techniques and assessment as well as participation in the scholarship of teaching and learning. Those with at least one college course in active-learning pedagogy indicated they used these innovative-teaching techniques more frequently than those with less or no such training.

With the current emphasis on assessment and accountability in higher education, faculty must demonstrate evidence of student learning through a variety of student-centered assessments. Understanding the factors that influence faculty teaching practices is an essential component to improving teaching and student learning.

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APPENDIX A

FACULTY SURVEY ON TEACHING PRACTICES

Faculty Survey on Teaching Practices

This survey is comprised of adaptations of Sections 1, 5, and 6 of the "Faculty Survey on Teaching, Learning and Assessment " (2000) developed by the National Center for Postsecondary Improvement, Project on Institutional Support for Student Assessment, University of Michigan, School of Education, Ann Arbor, MI. Eric L. Dey and Sylvia Hurtado, Project Directors.
Please select the most appropriate response.

Section I—Teaching Practices

I. How frequently do you do each of the following?

1 = Never; 2 = Once in a while; 3 = Sometimes; 4 = Fairly often; 5 = Frequently

1. Encourage students to collaborate on course work through study groups or internet discussions	1	2	3	4	5
2. Ask students directly to apply course concepts to real-life situations	1	2	3	4	5
3. Encourage students to act as "peer mentors" to others in review or discussion sections	1	2	3	4	5
4. Create regular assignments that have many different correct answers or approaches	1	2	3	4	5
5. Design classes to be highly interactive	1	2	3	4	5
6. Listen to students' concerns and take them into account in my teaching	1	2	3	4	5
7. Work to get students to ask questions during class	1	2	3	4	5
8. Expect students to guide the discussion and activities for a majority of class time	1	2	3	4	5
9. Introduce new or experimental teaching strategies in class	1	2	3	4	5

II. Regarding teaching and learning practices mentioned in the previous section, how do you evaluate your department's concern of each the following?

1 = Not a concern; 2 = A very minor concern; 3 =A concern;
4 =A strong concern; 5=A major concern

1. New practices seem too time-consuming	1	2	3	4	5
2. New practices seem ill-founded or ill-researched	1	2	3	4	5
3. These practices are difficult to perform well	1	2	3	4	5
4. There is pressure from peers to resist new practices	1	2	3	4	5
5. The new practice is less effective than traditional teaching techniques	1	2	3	4	5
6. Following new teaching trends or fads is dangerous	1	2	3	4	5
7. These type practices require giving up too much classroom control	1	2	3	4	5
8. New practices are too time-consuming for students	1	2	3	4	5
9. New practices are typically dictated by the needs of administrators	1	2	3	4	5

III. In how many of your courses do you do each of the following?

1 = None; 2 = One; 3 = A Few; 4 =Most; 5 =All

1. Collect and evaluate portfolios of student work	1	2	3	4	5
2. Use short in-class writing exercises (e.g., 1-minute papers) to quickly assess student understanding of course material	1	2	3	4	5
3. Use small group work/group projects	1	2	3	4	5
4. Have another faculty member review my teaching for feedback	1	2	3	4	5
5. Use service-learning experiences	1	2	3	4	5
6. Require student in-class presentations	1	2	3	4	5
7. Use student performance information to evaluate my own teaching	1	2	3	4	5
8. Try new teaching practices	1	2	3	4	5

IV. How frequently do you participate in the following activities?

1 = Never, because I am a new faculty member; 2 = never;
3 = occasionally; 4 = Fairly often; 5 = Frequently

1. Conduct research on teaching and learning	1	2	3	4	5
2. Evaluate the effectiveness of new teaching and learning practices for my department	1	2	3	4	5
3. Help determine the performance standard for students graduating from my department	1	2	3	4	5
4. Assist faculty peers in their use of new teaching and learning practices	1	2	3	4	5
5. Make recommendations to administrative offices about new teaching and learning practices	1	2	3	4	5
6. Talk with colleagues regularly about ways in which we can improve our teaching	1	2	3	4	5
7. Have a network of colleagues with whom I discuss teaching issues	1	2	3	4	5

Answer questions 8 & 9 only if you have three or more years teaching experience.

8. Evaluate faculty in their use of new teaching and learning practices	1	2	3	4	5
9. Make an effort to mentor junior faculty in their own teaching	1	2	3	4	5

V. How do you learn to use new teaching, learning, or assessment techniques?

1 = Never; 2 = Once in a while; 3 = Sometimes;
4 = Frequently; 5 = Almost always

1. Disciplinary conferences	1	2	3	4	5
2. Institutional faculty-development workshops	1	2	3	4	5
3. Presentations by faculty in your department	1	2	3	4	5
4. Discussion in faculty meetings	1	2	3	4	5
5. A designated master teacher in your department	1	2	3	4	5
6. Publications in my discipline	1	2	3	4	5
7. General higher-education publications	1	2	3	4	5
8. Your students	1	2	3	4	5
9. Conversations with faculty colleagues	1	2	3	4	5

Section 2—Demographics and Background

1. How many years have you been employed as a professional in higher education?

   (Select one.)
   1. 1 year
   2. 2–5 years
   3. 6–10 years
   4. 11–20 years
   5. 21–30 years
   6. More than 30 years

2. How many years have you been employed at this institution?

   (Select one.)
   1. 1 year
   2. 2–5 years
   3. 6–10 years
   4. 11–20 years
   5. 21–30 years
   6. More than 30 years

3. What is your sex/gender?

   1. Female
   2. Male

4. How do you identify your racial/ethnic background?

   1. African American or Black
   2. Asian or Asian American
   3. Hispanic or Latino
   4. Native American
   5. White or Caucasian
   6. Other

5. In what major disciplinary area do you teach? (If you teach in more than one, select your primary area)

   1. English and Social Studies (i.e., psychology, sociology, speech, etc.)
   2. Science and Mathematics
   3. Business and Computer Sciences
   4. Allied Health and Nursing
   5. Vocational/Technical and Technical
   6. Adult Literacy/Adult Basic Education

6. What is your highest degree?

   1. High school diploma
   2. Associate's degree
   3. Bachelor's degree
   4. Master's degree
   5. Doctoral degree

7. What best describes your highest level of professional training in pedagogical methods that included active learning practices?

1. No professional training
2. Faculty-development training only
3. One or more college credit courses
4. A degree in education which included courses in active learning pedagogical practices.

APPENDIX B

CONSENT FOR USE OF SURVEY

lgrisham@hotmail.com

From : Eric Dey <dey@umich.edu>
Sent : Wednesday, July 23, 2003 2:56 PM
To : Linda Grisham <lgrisham@hotmail.com>
Subject : Re: research

Hello:

Permission to use the survey is hereby granted, provided that the original authorship of the survey is acknowledged in any publications based on this work, and that the material is not being reproduced for commercial use.
Good luck!

Linda Grisham wrote:
Dr. Dey,

I am a doctoral student at the University of Nebraska. I am developing my dissertation proposal on the influence of departmental affiliation and pedagogical training on faculty use of innovative teaching techniques. I will be surveying the technical college faculty in my home state of Georgia.

I am very interested in the survey instrument you developed: "Faculty Survey on Teaching ,Learning and Assessment" developed at the National Center for Postsecondary Improvement. I am particularly interested in the sections that measured teaching innovation, active learning, and departmental support for innovation. I'm interested in learning how these sections of the survey were developed. Also, I am interested in obtaining permission to use part of the survey in my study.

Your help would be greatly appreciated.
Thank-you, Linda Grisham

770-830-1018
lgrisham@hotmail.com
Eric L. Dey
Executive Associate Dean
Associate Dean for Research Associate Professor of Higher Education
University of Michigan School of Education
==========

dey@umich.edu - http://www.umich.edu/~dey

APPENDIX C

PERMISSION TO CONDUCT FACULTY SURVEY

GEORGIA DEPARTMENT OF TECHNICAL AND ADULT EDUCATION
TECHNICAL COLLEGE SYSTEM OF GEORGIA
SONNY PERDUE, GOVERNOR

Ronald W. Jackson
Commissioner

Dr. Freida H. Hill
Deputy Commissioner

June 20, 2008

Linda Grisham
1235 Hapy Hill Road
Carrollton GA 30116

Re: The Influence of Departmental Affiliation and Pedagogical Training on Faculty Adaptation of Innovative Pedagogical Methods in Georgia Technical Colleges

Dear Ms. Grisham:

This is your official notification of the approval for you to conduct the Faculty Survey on Teaching Practices within the Technical College System of Georgia (TCSG).

Please let me know if you have any questions or need additional assistance.

Sincerely,

Sandra Kinney

Sandra Kinney
Research Manager

1800 Century Place, Suite 400, Atlanta, Georgia 30345-4304, 404 679 1660, Fax 404 327 6932

APPENDIX D

INSTITUTIONAL RESEARCH BOARD APPROVAL

University of Nebraska Lincoln

HUMAN RESEARCH PROTECTIONS
Institutional Review Board

February 6, 2008

Linda Grisham
Dr. Sheldon Stick
1235 Happy hills Rd
Carrollton, GA 30116

IRB# 2004-11-106 EX

TITLE OF PROJECT: **The Influence of Departmental Affiliation and Pedagogical Training on Faculty Adaptation of Innovative Pedagogical Methods in Georgia Technical Colleges**

Dear Linda:

This is to officially notify you of the approval of your project's Continuing Review by the Institutional Review Board for the Protection of Human Subjects. It is the committee's opinion that you have provided adequate safeguards for the rights and welfare of the subjects in this study. Your proposal seems to be in compliance with DHHS Regulations for the Protection of Human Subjects (45 CFR 46).

1. Attached on NUgrant is the IRB approved Informed Consent form for this project. Please use this form when making copies to distribute to your participants. If it is necessary to create a new informed consent form, please send us your original so that we may approve and stamp it before it is distributed to participants.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

- Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
- Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
- Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
- Any breach in confidentiality or compromise in data privacy related to the subject or others; or
- Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

It is the responsibility of the principal investigator to provide the Board with a review and update of the research project each year the project is in effect. This approval is valid until **January 11, 2009.**

If you have any questions, please contact Shirley Horstman, IRB Administrator, at 472-9417 or email at shorstman1@unl.edu.

Sincerely,

Dan R. Hoyt, Chair
For the IRB

APPENDIX E

PILOT SURVEY RESULTS

Table I.1
Table of Analysis of Variance Results for Pilot Study

Dependent variable	Independent variable	ANOVA results
Use of active-learning practices	Department affiliation	F (9, 94) = 1.413, $p < .05$
Courses using active-learning practices	Department affiliation	F (9, 89) = 1.312, $p < .05$
Scholarship of teaching and learning	Department affiliation	F(9, 93) = 1.484, $p < .05$
Use of active-learning practices	Pedagogical training	F(5, 97) = 1.146, $p < .05$
Courses using active-learning practices	Pedagogical training	F(5, 92) = 1.326, $p < .05$
Scholarship of teaching and learning	Pedagogical training	F(5, 96) = 1.412, $p < .05$

Note. None of the ANOVA's revealed a significant difference; ANOVA = analysis of variance.

APPENDIX F

PERMISSION TO CONDUCT FACULTY PILOT SURVEY

GEORGIA DEPARTMENT OF TECHNICAL AND ADULT EDUCATION

Michael F. Vollmer, Commissioner

December 14, 2004

Charles R. Beall, Assistant Commissioner
Technical Education

Mrs. Linda Grisham
1235 Happy Hill Rd.
Carrollton, GA 30116

Re: Research survey

Dear Mrs. Grisham:

As we discussed by e-mail, the Instructional Support Services Division of the Georgia Department of Technical and Adult Education, will assist you with your research, "The Influence of Departmental Affiliation and Pedagogical Training on Faculty Adaptation of Innovative Pedagogical Methods in Georgia Technical Colleges," by granting you permission to survey the full-time faculty members in Georgia's technical colleges. You have been granted permission to contact the participants by e-mail to take the on-line survey posted on a University of Nebraska-Lincoln web site.

If you have additional questions, please feel free to contact me at 404-679-1688 or by email.

Sincerely,

Fred E. Kiehle III

Fred E. Kiehle, III, Ph.D.
Director, Instructional Support Services

1800 Century Place, Suite 400, Atlanta, Georgia 30345-4304, 404 679 1660, Fax 404 679 1675

APPENDIX G

FIRST RECRUITMENT LETTER TO ELIGIBLE SURVEY PARTICIPANTS

IRB#: 200 4-11-106 EX.

Dear Georgia Technical College Faculty Member:

I am writing to ask your help in a study of Georgia Technical College faculty members. The study will examine factors that influence faculty members' pedagogical choices. The survey, "The Influence of Departmental Affiliation and Pedagogical Training on Faculty Adaptation of Innovative Pedagogical Methods in Georgia Technical Colleges", is being conducted for my dissertation at the University of Nebraska – Lincoln.

Participation in this study is voluntary and in no way affects your status with the State of Georgia Technical College System. Your response is extremely important, and you can be assured of complete confidentiality. No identifying information is sought from participants, and there is no way of determining whether a subject responds.

There are no known risks or discomforts associated with the research. You are free to decide not to participate in this study or to withdraw at any time without adversely affecting your relationship with the investigators, the University of Nebraska or your college. If you have any questions or concerns about this study, please feel free to contact the investigator at telephone 770-830-1018 or the secondary investigator at telephone 402-472-0973.

If you have any questions concerning your rights as a research subject that have not been answered by the investigator or to report any concerns about the study, you may contact the University of Nebraska-Lincoln Institutional Review Board, telephone (402) 472-6965.
Your assistance in completing this survey will provide important information in evaluating the pedagogical practices of technical college instructors. The data gathered will be made available for public consumption through professional meetings and professional journals.

The survey should take only 15 -20 minutes of your time. Please take the opportunity to share your opinions by completing the on-line survey.

Please click on the link to begin the survey. Submission of the survey implies consent. If the hyperlink does not work, cut and paste it directly to your web browser.
https://www.surveymonkey.com/s.aspx?sm=mKyNnI7Zh5MCNETeFUQaNg_3d_3d
(It may be necessary to CTRL + click to follow the link or cut and paste address to access the survey.)

Thank you in advance for your time and cooperation.

Sincerely,

Linda Grisham, MA	Sheldon Stick, Ph. D.
Principal Investigator	Secondary Investigator

APPENDIX H

SECOND RECRUITMENT LETTER TO ELIGIBLE SURVEY PARTICIPANTS

IRB#: 2004-11-106 EX.

Dear Georgia Technical College Faculty Member:

Last week an e-mail was sent to you seeking your participation in a survey of faculty teaching practices. Your name was chosen because you teach in a Georgia technical college.

It you have already completed and submitted the survey, please accept our sincere thanks. If not, please do so today. We are especially grateful for you help because it is only by asking people like you to share your experiences that we can obtain important information to evaluate the pedagogical practices of technical college instructors.

Please click on the link below to access the survey. The survey should take only 15 -20 minutes of your time and your responses are completely confidential.

Thank-you in advance for your participation.

https://www.surveymonkey.com/s.aspx?sm=mKyNnI7Zh5MCNETeFUQaNg_3d_3d

(It may be necessary to CTRL + click to follow the link or cut and paste address to access the survey.)

Sincerely,
Linda Grisham, MA
Principal Investigator
Sheldon Stick, Ph. D.
Secondary Investigator

APPENDIX I

THIRD RECRUITMENT LETTER TO ELIGIBLE SURVEY PARTICIPANTS

IRB#: 2004-11-106 EX.

Dear Georgia Technical College Faculty Member:

About three weeks ago an e-mail was sent to you seeking your participation in a survey of faculty teaching practices. Your name was chosen because you teach in a Georgia technical college.

We are writing again because of the importance that your survey response has for helping to get accurate results. It you have already completed and submitted the survey, please accept our sincere thanks. If not, please do so today. We are especially grateful for you help because it is only by asking people like you to share your experiences that we can obtain important information to evaluate the pedagogical practices of technical college instructors.

Please click on the link below to access the survey. The survey should take only 15 -20 minutes of your time and your responses are completely confidential.

Thank-you in advance for your participation.

(It may be necessary to CTRL + click to follow the link or cut and paste address to access the survey.)

https://www.surveymonkey.com/s.aspx?sm=mKyNnI7Zh5MCNETeFUQaNg_3d_3d

Sincerely,
Linda Grisham, MA
Principal Investigator
Sheldon Stick, Ph. D.
Secondary Investigator