PEDAGOGICAL TRAINING AND INSTRUCTIONAL METHODS AMONG KANSAS COMMUNITY COLLEGE FACULTY

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Abstract

Over 11.8 million college students attend community colleges in the United States (American Association of Community Colleges, 2010), yet not much is known about the pedagogical training of and instructional methods used by instructors who teach those students. The purpose of this study was to gather information concerning the pedagogic background and use of instructional strategies by Kansas Community College general education instructors. A survey administered through an online survey site gathered information from fulltime community college instructors in Kansas Community Colleges. Results from 187 respondents indicate half of the instructors surveyed received K-12 teaching certification; just over half of the respondents indicated taking at least one course in pedagogy. Lecture was the most commonly used instructional strategy, both in number of instructors who used the strategy, and in the amount of time the strategy was used in the classroom. However, most instructors indicated the use of more than one instructional strategy. A relationship was found between pedagogical training and the use of several instructional strategies. A relationship was found between the length of service at the community college level and the use of several instructional strategies. Results indicate a relationship between the disciplines and the use of several instructional strategies.

DEDICATION

This clinical research study is dedicated to the most important people in my world: my family.

To my wonderful husband, Ron,
for his understanding and support as he listened to countless one-sided conversations about this research without complaining. You are the love of my life and I couldn't do any of this without you!

To my amazing children, Justin, Sherri, Alicia, and Lindsay,
who have supported me through this time-consuming journey. I am so proud of the people you are becoming.

To my remarkable grandson Kody,
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Chapter One

Introduction and Rationale

Almost half of all college students gain access to higher education through community colleges. Based on December 2009 data, The American Association of Community Colleges indicated community colleges educate 11.8 million students in the United States (2010). Overall, 44% of all college students and 40% of first-time freshmen choose community colleges for higher education. Enrollment numbers increased between fall 2007 and fall 2009 by an estimated 16.9% (American Association of Community Colleges, 2010). It is appropriate and timely to examine instructional practices as enrollment in community colleges continues to increase. Student success is maximized when the pedagogical training of community college faculty and the use of instructional strategies target the unique characteristics of diverse student learners.

Problem Statement

Students choose community colleges for higher education for different reasons: low tuition rates, easy access to classes for working adults, location of campuses for commuters, availability of specialized programs, and access to remedial assistance (Van Der Linden, 2002). Van Der Linden showed in 1999 that students enrolled in community colleges begin their education career with a variety of goals; as shown in Figure 1, 45% of students enrolling in community colleges plan to continue their education at another institution. Van Der Linden grouped transfer students into two categories: those who have already determined their future degree goals and those who intend to transfer but want to explore subjects before they decide on a degree. Community colleges are

increasingly institutions of choice for today's students for job training programs and as preparation for transfer to four-year degree programs.

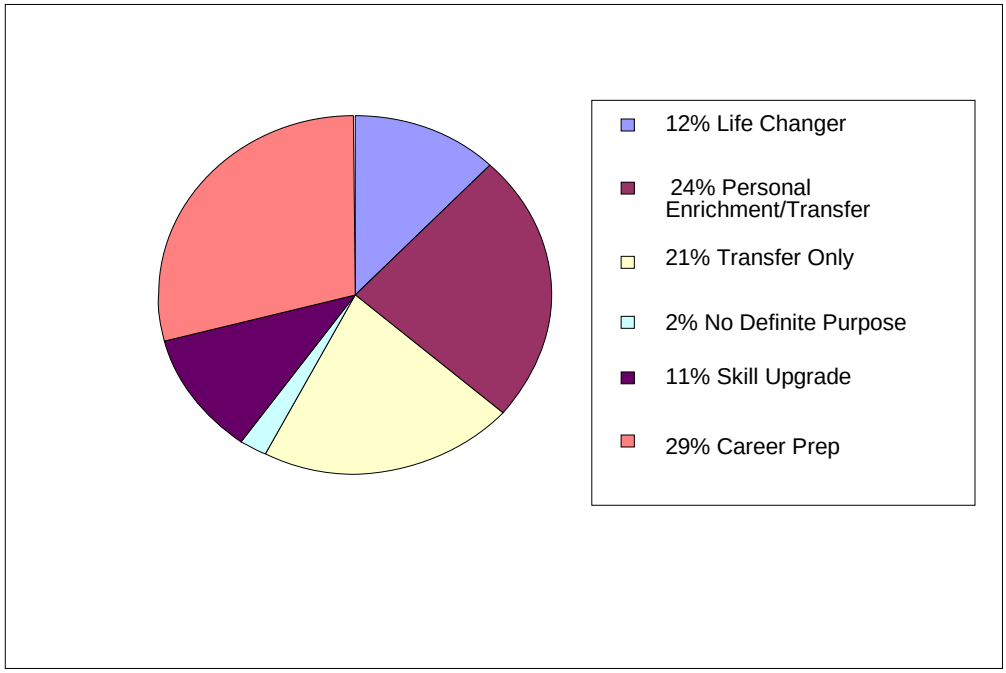

Figure 1. Reasons for enrolling in community college.

Adapted from *A Portrait of America's Community College Students: Credit Student Analysis, 1999 and 2000.* By K. Van Der Linden, 2002, p. 3. Copyright 2002 by the American Association of Community Colleges.

Growing enrollment at community colleges urge examination of the instruction provided for those students. Chickering and Gamson (1987) claimed "learning is not a spectator sport" (p. 45). Rather students "must talk about what they are learning, write reflectively about it, relate it to past experiences, and apply it to their daily lives. They must make what they learn part of themselves" (p. 45). In other words, students need to be actively involved in the learning process. Marzano (1998) and Wenglinsky (2002) indicated a positive relationship between engaging students in the learning process and positive student achievement. However, despite educational research into effective

teaching and learning strategies, many college and university faculty members still copy the methods by which they were taught and rely on the lecture format for classroom presentations (Shuman, 2005). Dunn and Dunn (1979) stated "Teachers teach the way they learned" (p. 241). Traditional strategies, such as lecture, are popular means of instruction in community colleges (Outcalt, 2002). Cohen and Brawer (2003) noted most students are taught "sitting in classrooms, listening to lectures, watching demonstrations . . . and writing examinations" (p. 167). Typically, community college faculty members who do not come to the position with a pedagogical background have limited opportunities to learn the needed skills, such as classroom management techniques, lesson design, assessment construction, and collaborative teaching strategies. McKeachie (2011) suggested the employment of learner-centric activities, which engage students cognitively, are most effective.

Background

Two-year colleges began in 1901 with the establishment of Joliet Junior College (Phillippe & Sullivan, 2005). During the twentieth century, public community colleges grew dramatically in number. Cohen and Brawer (2003) reported 74 public community colleges in the United States in 1914 and 1,244 public community colleges by 1998. Cohen and Brawer identified the time between 1964 (719 community colleges) and 1972 (1,141 community colleges) as the period of largest growth. The 2010 Fact Sheet from the American Association of Community College indicated 1,173 community colleges in the United States in 2010. Many of these institutions began in communities previously without access to higher education. In Kansas, communities began establishing junior colleges in 1917; the title of these schools was later changed to community colleges

(Cohen & Brawer, 2003). Kansas community colleges grew in number from four in 1919 to the current number (19) by 1969 (American Association of Community Colleges, n.d.).

Higher education students in Kansas enrolling in public institutions today choose between the public community college system and the Kansas public university system, both under the administration of the Kansas Board of Regents. The Kansas Board of Regents administrates 19 public community colleges, supported by both the legislature of Kansas and a locally elected board of trustees, and six Kansas public universities, supported by the legislature of Kansas (1995).

Comparing enrollment headcounts for Kansas community colleges and public universities in the higher education system highlights the popularity of community colleges. A Nelson A. Rockefeller Institute of Government report indicated Kansas community colleges enrolled 31.3% of all higher education students in the state, which ranked eleventh among states in the percentage of all higher education students who attend community college (Shaffer, 2005). Current information from the Kansas Board of Regents (2010a) showed 71,906 students enrolled in the 19 Kansas community colleges during the fall 2008 semester, as listed in Table 1. The six Kansas public universities for that same semester indicated enrollment of 91,872 (see Table 2). Numbers for the fall 2008 semester indicated 44% of the 163,778 official headcount enrolled in public higher education in Kansas enrolled at community colleges. This percentage included students enrolled in all public universities, which serve freshmen through doctoral students, therefore, Kansas community colleges educated a large percentage of Kansas college students in their freshmen and sophomore years.

Table 1

Enrollment Headcount by Institution, Kansas Community Colleges, Fall 2008

Community College	Enrollment
Allen County	2813
Barton County	4727
Butler County	8476
Cloud County	2151
Coffeyville	1936
Colby	1505
Cowley County	3586
Dodge City	1554
Fort Scott	1739
Garden City	1984
Highland County	2853
Hutchinson	4823
Independence	1234
Johnson County	19062
Kansas City Kansas	6605
Labette County	1343
Neosho County	2275
Pratt	1622
Seward County	1618
Total Headcount	71,906

Note. Adapted from *Kansas Community College Enrollment and Financial Statistics,* by Kansas Board of Regents, 2010a.

Table 2

Enrollment Headcount by Institution, Kansas State Universities, Fall 2008

State University	Enrollment
University of Kansas	30,102
Kansas State University	23,520
Wichita State University	14,612
Emporia State University	6,404
Pittsburg State University	7,127
Fort Hays State University	10,107
Total Headcount	91,872

Note. Adapted from *State University Databook,* by Kansas Board of Regents, 2010b.

When first organized, community colleges hired faculty from the secondary school teaching ranks. In the 1920s, 80% of community college faculty had previous high school teaching experience (Cohen & Brawer, 2003). According to Cohen and Brawer, all states have certification requirements for public school teachers, which required courses in effective instruction. Therefore, faculty hired from the K-12 ranks had taken courses in instructional design and pedagogy as part of the certification process. As the number of community colleges increased, Cohen and Brawer explained, the proportion of faculty coming from secondary schools decreased, with more faculty coming from graduate programs and specific trades, leading to fewer instructors with pedagogical training.

Unlike the kindergarten through twelfth grade system, which requires teachers to meet specific educational requirements in order to receive state certification to teach (Kansas State Department of Education, 2008), teaching at the community college level in Kansas requires no certification. The Kansas Department of Public Instruction formerly required Kansas junior college faculty to obtain a junior college certificate, which required a Master's Degree and eight hours of professional education course work (Kelley and Wilbur, 1970). This requirement remained until 1967; it is no longer in place. Kansas community colleges today expect general education faculty to have at least a Master's Degree in the field in which they teach; no specific requirements, such as a background in teaching or training in educational pedagogy, are necessary (Higher Learning Commission, n.d.).

Conceptual Framework

Today community college instructors enter the profession from varied arenas: graduate programs, public education, and private business and industry (Cohen & Brawer, 2003). The majority of community college faculty members hold master's degrees (Table 3). However, these numbers give no insight into specific pedagogical training, if any, of those faculty members.

Cohen and Brawer reported information about the pedagogical training of community college faculty, saying "Few community college instructors were prepared in programs especially designed for that level of teaching" (2003, p. 78). One administrator, quoted in *Creating the Future of Faculty Development: Learning from the Past, Understanding the Present,* stated "A major underlying reality affecting the present faculty is the lack of pedagogical preparation along with discipline specialization. Too

many new faculty members lack basic skills in areas such as course design, syllabus development, and learning theory" (Sorcinelli, Austin, Eddy & Beach, 2006, p. 76).

Table 3

Highest Level of Education Attained by Full-Time Community College Faculty

Year	Bachelor's Degree	Master's Degree	Doctoral Degree
1993	12%	65%	16.%
1998	18%	58%	20%
2010	11%	71%	13%

Note. 1993 and 1998 data adapted from *National Profile of Community Colleges: Trends and Statistics*, by K. Phillippe and L. Sullivan, 2005. Copyright 2005 by the American Association of Community Colleges. 2010 data adapted from American Association of Community Colleges, 2010

Terry O'Banion, director of the Community College Leadership Program at Walden University and former President of the League for Innovation in the Community College, is one of the most respected proponents of the need for a transformation to learner-centered instruction at community college level institutions. In 1972, O'Banion, claimed most instructors were neither "oriented to the community-junior college" (1972, p. 54) nor prepared for the role of teaching at that level; the result is "Discipline-oriented, narrow, subject-matter specialists" (p. 84). As a result of this lack of preparation for instructor responsibilities, community college instructors are usually well-prepared in their discipline area, but may lack a background or training in teaching (Anderson, 1996; Lail, 2005).

Significance

This study provides information about the pedagogical training of community college general education faculty members. Community college faculty who lack formal training in educational theory and practices may need assistance from their institutions to learn and/or implement multiple teaching techniques and strategies in the classroom. Better understanding the background and training in educational pedagogy of community college teaching faculty in Kansas institutions may help focus professional development programs to improve faculty efforts to present subject area knowledge incorporating a variety of instructional techniques.

Purpose Statement

The purpose of this study was to gather demographic information about Kansas community college general education instructors and their training in educational pedagogy. Additionally, the intent of this study was to collect information concerning the use of instructional strategies by faculty members in Kansas community colleges.

Delimitations

Only full-time faculty members at Kansas public community colleges were surveyed. Neither adjunct nor part-time instructors were invited to participate. Additionally, the study gathered information only from teaching faculty in disciplines defined by the Kansas Board of Regents as general education designed for transfer to a four-year degree program. The limited number of subjects selected for this study (731), creates a possibility that the number of completed responses will be smaller than desired.

Assumptions

An assumption was made that participants understood the survey questions and answered them honestly. It was also expected that survey participants had the necessary skills to participate in an on-line survey.

Research Questions

The research questions investigated in this study were:

1. What proportion of Kansas community college general education faculty has obtained K-12 certification?
2. What proportion of Kansas community college general education faculty has taken a course in instructional design or pedagogy?
3. What instructional strategies are used by Kansas community college general education faculty?
4. Is there a relationship between the pedagogical training of Kansas community college faculty and their use of multiple instructional strategies?
5. Is there a relationship between the years of service of Kansas community college faculty and their use of multiple instructional strategies?
6. Is there a relationship between the disciplines of Kansas community college faculty and their use of multiple instructional strategies?

Definition of Terms

Andragogy. The study of the needs of adult students; the "art and science of helping adults learn" (Knowles, 1980, p. 43).

Collaborative learning. An instructional strategy that allows students to learn as a group from each other (McKeachie & Svinicki, 2003).

Community college. A public or private educational institution accredited to offer the Associate of Science or Associate of Arts degree as its highest degree (Foote, 1997).

Faculty. Full-time academic staff responsible for teaching in the classroom. In Kansas community colleges, faculty are those employees of the community college who fall under a negotiated agreement for the institution (Kansas Board of Regents, Policies, 2010).

General education courses. Courses designed to be taken by all students, regardless of their major. These courses are typically entry level courses in Composition, Science, Speech, Mathematics, Social and Behavioral Sciences and Arts and Humanities (Kansas Board of Regents, 1995, pp. 146-147).

Games. An instructional strategy that divides the class into teams that compete with each other to demonstrate understanding of a topic.

Group discussion. An instructional strategy in which students are divided into groups to discuss an assigned topic.

Group projects. An instructional strategy in which students are divided into groups to complete an assigned project.

Jigsaw. An instructional strategy that assigns students to groups to learn a specific task or piece of information they then teach to other students (McKeachie & Svinicki, 2010a).

K-12. The public education system, including grades Kindergarten through twelfth grade.

Kansas Community College System. The 19 publicly supported community

colleges in Kansas under the administration of the Kansas Board of Regents (Kansas Board of Regents, 2010).

Lecture. An instructional strategy in which the instructor presents information to the class as a whole.

Pedagogy. The study of the needs of students; the "art and science of helping children learn" (Knowles, 1980, p. 43).

Role playing. An instructional strategy in which students act out an assigned role in a hypothetical situation.

Service learning. An instructional strategy that allows students to apply what they have learned in the classroom while performing service in their community.

Simulations. An instructional strategy that establishes a real-world process or issue for students to learn about through their participation.

Socratic discussion. An instructional strategy in which the instructor poses a series of questions to students designed to help them understand an idea or topic.

Student presentations. An instructional strategy in which students present a project or a topic that is designed to demonstrate their understanding to the class.

Overview Methodology

This research is a starting point for data collection about the training in instructional pedagogy of Kansas community college faculty, identified through department lists of full-time instructors found on the 19 community college web sites. A survey was developed containing 13 questions concerning faculty teaching background and their use of instructional strategies in the classroom. Invitations to complete the survey were sent by e-mail to all identified general education faculty members in Kansas.

The survey was administered through a commercial online survey site, Survey Monkey. Results were analyzed through descriptive statistics, chi-square tests of equal percentages, *t* tests for independent means, and one-factor ANOVA.

Organization of the Study

Chapter one presents the background and statement of the problem to be studied. Chapter two consists of a review of literature concerning community college teaching. Literature about strategies of effective instruction for adult learners, the demographics and preparation of community college faculty, and current trends in higher education towards learning-centered institutions is reviewed. Chapter three contains the design of the study and the survey instrument. Chapter four presents the results of the analysis of data from the survey. Finally, chapter five includes implications of the results, conclusions drawn from the data, and suggestions for further study.

Chapter Two

Review of Literature

While many authors opine what makes an effective instructor, little has been researched about the pedagogical training of community college instructors. Therefore, this literature review examines three related topics to illuminate the subject. First, literature concerning effective teaching strategies for learners in general, and adult learners in particular, is investigated. Secondly, research reflecting what is known about community college faculty members, including their responsibility for instruction, and such educational background as available, is reviewed. Finally, the trend in community college education towards learning-centered institutions is examined to understand the impact it can have on the expected role of the instructor.

Effective Teaching Strategies for Adult Learners

Much has been written about how to design instruction to ensure students learn. The MASTER Teacher, an organization focused on providing professional development for teachers, publishes a series called *The Professor in the Classroom.* The organization's one-page pamphlet, "If You Really Want to Teach So Students Remember," (2009), typifies the general literature available to faculty, as it explains the meaning of the Confucian saying, "I hear and I forget. I see and I remember. I do and I understand." The popular graphic "learning pyramid" illustrates that lecture, the most used strategy, results in a 5% learning retention rate; reading results in 10% retention; while utilizing technology, which combines sound and visuals, leads to 20% retention. Other strategies described are demonstration (30% retention); group discussion (50% retention); and practice (75% retention). The greatest level of learning retention, 90%, takes place when students teach someone else what they are learning ("If you really,"

2009). This viewpoint is central to many ideas about active learning and organizing learning opportunities for students.

Community colleges primarily educate adults. While the ages of students may range from 16 to 90, according to the American Association of Community Colleges (2010) the average age of the community college student is 29, with 40% of the students age 22 to 39, and 13% of students 40 or older.

The term *andragogy* describes the theory that adults learn differently from children (Bolton, 2006). Popularized by Malcolm S. Knowles, author of a variety of books on adult learners (Lee, 1998), the basic principles of andragogy include creating an environment conducive to learning and involving the learners in diagnosing their individual learning needs, formulating individual learning objectives, and designing and evaluating the learning. Merriam (1993) found adults are more self-directed as students; Pratt (1993) opined adult learners should be involved with establishing learning goals, working in a collaborative relationship with the instructor or facilitator; and Herr (2003), in his study about improving community college instruction, found that facilitating learning for adults requires the integration, application, and contextualization of information.

As community college faculty members focus on teaching skills in addition to content, traditional teaching methods may be less effective, requiring instructors to change the way they teach (Weimer, 1990). Conti and Kolody (2003) denoted the difference between a professional and a paraprofessional as informed use of specific methods. Galbraith (2003) claimed teachers of adult learners should be aware of the needs of adult students to be successful in the classroom, through use of varied teaching

styles suited to the individual learner. Or, as Anderson and Adams remarked, "Effective teaching cannot be limited to the delivery of information; rather, it needs to be based on a model of minds at work. Effective teachers are those who involve all of their students in learning how to learn" (1992, p. 20).

Much has been written about the value of using more active instructional strategies in the classroom. McKeachie and Svinicki (2010) discussed the concept of active learning, where students learn in groups and work with their peers to improve cognitive outcomes. Johnson, Johnson, and Smith (1991) described a new paradigm of teaching, where college-level education moved from the old attitude of "filling passive empty vessels with knowledge" (p. 14) to a new philosophy of working with students to help them "actively construct their own knowledge" (p. 16), one definition of active learning. Wenglinsky (2002) found hands-on learning, one example of active learning, increased student achievement. McConnell, Steer, Owens, and Knight (2005) demonstrated the effectiveness of active learning strategies on the learning and retention of information in an earth science course.

Cooperative learning is one useful strategy for active learning, which can be used a variety of ways in the classroom to enhance learning (Johnson, et al, 1991). However, the authors warn there is more to successfully utilizing cooperative learning than just assigning students to a group. Hudson (2005) showed the effectiveness of collaborative learning for adult students at the community college level in his comparison of collaborative learning and traditional lecture methods of instruction with two classes of students. A 10-week study that assessed the learning of 30 traditional (18 to 22 years of age) and 30 non-traditional (23 years or older) students through both traditional lecture

and collaborative learning, found both traditional age students and non-traditional age students learned better with the use of collaborative learning; both groups preferred the collaborative learning method (see Table 4).

Table 4

Effectiveness of Instruction for Traditional and Nontraditional Students

Type of Student	Type of Instruction	N	Posttest Mean	Difference
Traditional	Lecture	30	69.83	
Traditional	Collaborative Learning	30	92.33	22.50
Nontraditional	Lecture	30	72.42	
Nontraditional	Collaborative Learning	30	96.92	24.50

Note: Adapted from *A Comparative Analysis of the Effects of Pedagogical and Andragogical Instructional Methods on Academic Performance of Community College Students*, by G. Hudson, 2005.

Kim (2004) examined the literature on adult learning and listed methods such as service-learning, individually designed projects, and group discussions as effective. While discussion is often used as a part of the lecture/discussion strategy, good group discussion requires awareness and planning on the part of the instructor to guarantee adult students participate in the learning process (Grubb & Associates, 1999). In interviews and observations of 257 community college instructors from around the nation, Grub and Associates frequently saw examples of "fill-in-the-blank" teaching, where the instructor waited for an expected answer, rather than true discussion (1999, p. 67). Even the assessment tools utilized can have an impact on adult learners. For

example, according to Bolton, "The use of rubrics helps adult learners identify critical components of an assignment by indicating why something is important and setting the initial framework for problem solving" (2006, p. 5). Because community colleges educate students from a wide variety of ages, it seems important for community colleges to address the different needs of the students. Using multiple instructional strategies in the classroom can improve overall student learning.

Community College Faculty and their Use of Instructional Strategies

While the job of a teacher is to teach students, understanding how learning happens at the community college level is more complicated. Community college faculty have a challenging job: "Community college teachers must deal on a daily basis with a tremendous diversity of students, ranging from the functionally illiterate to the merit scholar, from teenagers to senior citizens, and from blue-collar workers to white-collar professionals" (Tsunoda, 1992, p. 12). Instructors need to have subject area expertise, as well as proficiency in instruction (Tsunoda, 1992).

The American Association of Community Colleges established a commission to plan for the future of community colleges into the 21st Century. In this report, the Commission on the Future of Community Colleges articulated the role of the community college faculty:

> In addition to the scholarship of discovering knowledge, through research, it is also important to recognize the scholarship of *integrating* knowledge through curriculum development, the scholarship of *applying* knowledge through service, and, above all, the scholarship of *presenting* knowledge through effective teaching. (1988, p. 26)

Spear described the community college instructor as "not exactly college professors, or trade school teachers, or high school teachers" but something similar yet different (1992, p. 22). Community college instructors are expected to embrace teaching students with broad backgrounds and levels of educational preparation, while staying connected to their professional disciplines; they are expected to prepare students within specific disciplines while being able to design classroom experiences that result in learning for all students and to assess the effectiveness of the instruction (Palmer, 1992). Roueche (1990) opined community colleges should hire faculty who have outstanding skills both in their academic discipline and in the classroom. Campbell claimed, "Faculty must have the appropriate skills to analyze a course, determine objectives, design a learning experience, and evaluate learning" (2009, pp. 35-36).

If, as the Commission on the Future of Community Colleges stated, "Teaching is the heartbeat of the educational enterprise" which requires "active learning in the classroom" (1988, pp. 7-8), then community colleges should be concerned about whether instructors utilize a variety of instructional strategies to provide opportunities for active learning in the classroom and assessing the effectiveness of that instruction. Yet traditional lecture still dominates when instruction is delivered to community college students, as results from the 1999 National Survey of Post-secondary Faculty indicated:

> Despite varying levels of connection to the academic world, faculty members across disciplines hold to traditional instructional approaches. When faculty members were asked about their use of 'lecture/discussion,' 88 % of the faculty indicated that it is the primary instructional method in some or all of their classes (Palmer , 2002, p. 12).

Using the same survey, which sampled over 28,000 faculty and instructional staff from institutions of higher education, Schuetz reported faculty members "use an average of 43% of class time for lectures, 15% for class discussions, and 11% for quizzes and examinations, accounting for over two-thirds of class time with these three teaching methods alone" (2002, p. 40). Outcalt (2002) conducted a survey of community college faculty members, consisting of a national random sample of 1531 community college instructors (Table 5). The results of the survey indicated instructors used lecture more than twice as much as the second most used instructional activity, class discussion.

Table 5

Instructional Activities by Percentage of Class Time

Activity	*M* %
Instructor Lectures	36.63
Class Discussion	14.39
Quizzes/Exams	8.74
Student Computer	6.90
Lab Experiments	6.21
Student Presentations	5.21
Lectures/Experiments	4.53
Viewing Media	3.97
Simulation/Gaming	2.28

Note: Adapted from *A Profile of the Community College Professorate*, by C. Outcalt, 2002.

Since 1989, the Higher Education Research Institute (HERI) at the Graduate School of Education and Information Studies at UCLA has periodically administered a survey of higher education faculty. The respondents are full-time faculty members from hundreds of community colleges, four-year colleges, and universities who teach undergraduate students. When comparing results of the survey since 1995, the use of lecture has decreased slightly (49% in 1995; 46% in 2008), while the use of more active strategies, such as cooperative learning, has increased significantly, as seen in Table 6.

Table 6

Faculty Approaches to Teaching

Method used in "most" or "all" courses (%)	2008	2005	2001	1998	1995
Extensive lecturing	46	55	47	47	49
Cooperative learning	59	48	41	37	35
Student presentations	47	45	36	33	31
Group projects	36	33	27	23	23

Note: Adapted from *The American College Teacher: National Norms for the 2007-2008 HERI Faculty Survey*, by L. DeAngelo, S. Hurtado, J. Pryor, L. Kelly, J. Santos, and W. Korn, 2009; *The American College Teacher: National Norms for the 2004-2005 HERI Faculty Survey,* by J. Lindholm, K. Szelenyi, S. Hurtado, and W. Korn, 2005; *The American College Teacher: National Norms for the 2001-2002 HERI Faculty Survey,by* J. Lindholm, A. Astin, L. Sax, and W. Korn, 2002.

Up through 2008, lecture remained the most utilized strategy in the higher education classroom.

In a more recent study, Campbell (2009) found some individual faculty used more learner-centered teaching techniques, as illustrated in Table 7. In her study of 185 community college faculty members from three community colleges in the southeastern part of the country, 98% reported the use of lecture as one of their instructional strategies; at the same time, 95% indicated they used other methods as well. Despite the use of a variety of instructional methods, only 67% of the respondents reported having received instructional training in the use of active learning.

Table 7

Percentage of Time Spent on Instructional Methods

Instructional Method	Never	1-25%	26-50%	51-75%	76-100%
Lecturing	1.08%	29.19%	35.13%	23.78%	9.19%
Discussion	1.08%	52.97%	29.19%	9.19%	2.71%
Student presentations	17.30%	58.8%	4.32%	3.24%	0.00%
Group Activities	3.24%	56.22%	22.70%	4.32%	3.78%
Lab Teaching	29.19%	21.08%	18.38%	7.03%	1.62%
Videos/DVD	16.22%	55.13%	3.78%	0.54%	0.54%
Hybrid/Online Format	32.97%	21.08%	7.03%	2.71%	2.16%
Other	--	3.24%	1.08%	0.54%	--

Note: Adapted from *A Survey of Community College Faculty, their Teaching Methodologies, and Congruence with Students Learning Needs,* by S. Campbell, 2009.

Dunn and Dunn (1979) explained that a person's teaching style is typically aligned to how he or she learned, but the style can be changed through understanding how other teaching approaches can improve learning with some students. Community colleges evidence a need for faculty to support the emphasis on learning. Matney (2001) studied the factors that influence innovative practices in the classroom and found that instructors can learn to adopt more active teaching strategies through participation in faculty professional development and the influence of other department members. O'Banion (2000) claimed:

> All new staff should be committed to the culture of placing learning first and should bring skills and competencies related to creating learning for students as their first priority, or at least be willing to develop the appropriate skills and competencies through staff training programs (p. 6).

Without such training and support, faculty may return to the most familiar teaching style—lecture.

The role of community college instructors is different from that of instructors in other institutions of higher education. Community college faculty members teach more credit hours each semester, an average of 15 credits, than do their university counterparts (Tsunoda, 1992). Townsend and Twombly (2007) reported full-time community college faculty members spend 85% of their time on teaching related tasks, with, on average, 19 hours each week spent on teaching large classes, with no teaching assistants. Community college faculty members are also typically expected to advise students on how to attain their future educational goals, serve on institutional committees, and keep current of advances in their curricular area (Grubb & Associates, 1999).

Garnering a detailed picture of the pedagogical training of community college faculty members today is difficult. No certification is required of community college general education instructors. The guidelines from one regional accrediting association for community colleges, the Higher Learning Commission of the North Central Association of Colleges and Schools (n.d.), indicate instructors need a master's degree in the field in which they are teaching. For example, the Labette Community College educational requirement for an instructor of a general education course reflects the guidelines established by the Kansas Board of Regents and the Higher Learning Commission: "Each faculty member teaching a general education course holds a minimum of a graduate degree, including 18 semester hours of graduate coursework related to the discipline of the course being taught" (Labette Community College, 2009).

Using data gathered from the 1999 National Study of Postsecondary Faculty (National Center for Educational Statistics, 2002), Hardy and Laanan (2006) indicated the most common degree held by community college faculty was a master's degree, accounting for 62% of the sample, with 18% having a doctorate, and 20% having a bachelor's degree or lower. However, the statistics contain no information regarding how many instructors had taken any courses in pedagogy.

A comprehensive examination of the community college faculty recognized few instructors come into the field with a background in instruction (Cohen & Brawer, 2003). In the 1970s, "The proportion of instructors with prior secondary school experience declined…more were coming from graduate programs, the trades, and other community colleges" (Cohen & Brawer, 2003, p. 77). At that time, "Few community college instructors were prepared in programs especially designed for that level of teaching"

(Cohen & Brawer, 2003, p. 78). This trend continues. Pollard (2005) indicated no direct path for faculty to the community college; they enter with a wide variety of backgrounds and training. Even faculty who come from graduate school teaching duties may not be prepared for their instructional responsibilities (Pollard, 2005). Lail (2009) questioned whether current community college faculty members are prepared to teach the current diverse student body.

In the 1990s, new faculty began entering the community college teaching ranks from non-academic careers rather than from public schools or graduate schools, as had been the previous pattern (Lail, 2009). In her 2005 study of 143 early career instructors (those with 3 or less years of service) at the community college level in North Carolina, Lail found 70.7% of her sample had entered the profession from outside education. She also found 50.4% of respondents utilized lecture and other traditional teaching strategies as their primary teaching style. Lail suggested "Prior teaching experience has a strong association to learning-centeredness" (2005, p. 117).

These findings point to a significant number of faculty members without training as educators. Weimer explained the lack of instructional training leads to an instructional staff that lacks "instructional awareness," the ability to know why something is successful in the classroom (Weimer, 1990, pp. 9-10). Campbell (2009) found the majority of participants in her survey (84%) described learning about methods of teaching and assessment from "trial and error in the classroom," rather than formal degree coursework (p. 95). "If faculty were trained as educators, they could intentionally plan strategies to increase learning, but many [faculty] have to discover what works through practice and observation" of other instructors (Campbell, p. 33). Grubb and

Associates claimed, based on observation and interviews with 257 community college instructors, "Without preparation in teaching . . . instructors are basically on their own" (1999, p. 44).

Learning-Centered Colleges

The past 15 years witnessed a new focus for community colleges as administrators began to push for transformation from instructor-centered institutions to learning-centered institutions. According to Barr and Tagg (1995), this paradigm shift is intended to move institutions from places that provide instruction to places that produce learning. Implementing this shift demands a corroborating change in the role of the instructor from providing instruction, typically using traditional lecture at its core to transfer knowledge, to producing student learning, necessitating the use of a variety of learning strategies to allow students to construct knowledge for themselves (Barr & Tagg, 1995).

In *A Learning College for the 21st Century* (1997), O'Banion examined the education reform movement launched by the *Nation at Risk* report from the National Commission on Excellence in Education in 1983 and the lack of meaningful reform in higher education that followed the report's release. The problem, according to O'Banion, lies with the system used to educate, based on "time-bound," "place-bound," "role-bound" organizations, where teachers are expected to be "knowledge experts, assessors, evaluators, managers, data controllers, artists, group facilitators, counselors, information processors, lecturers, problem analysts, problem solvers, coaches, mentors, behavior controllers, and value clarifiers" (O'Banion , 1997, pp. 10-14). O'Banion advocated for real reform that would require implementation of a new vision of education that places

"learning and the learner first" (p. 19). O'Banion proposed community colleges were the ideal places for implementation of such a vision due to an existing commitment to the mission of teaching. "The purpose of teaching is to help students make passionate connections to learning" (O'Banion, 1994, p. vii).

A learning college, in O'Banion's vision, should be based on six key principles. The learning college:

> creates substantive change in individual learners . . . engages learners as full partners in the learning process, with learners assuming primary responsibility for their own choices...creates and offers as many options for learning as possible...assists learners to form and participate in collaborative learning activities...and defines the roles of learning facilitators by the needs of the learners. The learning college and its learning facilitators succeed only when improved and expanded learning can be documented for its learners (1997, p. 47).

Focus on the learner is central to O'Banion's concept of a learning college. Such a transformation requires change at all levels of the institution, particularly in the role of the instructor from lecturer to facilitator of the learning process (O'Banion, 1997).

Some community colleges have made the commitment to the necessary transformation called for in the learning-centered college movement, and the ideas about overall focus on the learner have been applied in community colleges across the country. If O'Banion is correct, this transformation will be difficult to translate into real improvement in student learning unless faculty members have the training and skills necessary to facilitate learning for all students.

Summary

The available literature concerning instruction or instructors at the community college level evidenced some trends. First, specific awareness exists neither of the pedagogical training of community college faculty members nor the need for it. Secondly, despite abundant discussion throughout education about student-directed instruction, research shows most community college instructors still primarily utilize lecture as a means of teaching students. The next chapter will describe the methods used in this study to begin the process of gathering information about Kansas community college general education faculty, their backgrounds and training, and their use of various instructional strategies in their classrooms.

Chapter Three

Methods

The purpose of this study was to gather information about community college instructors, their training, and their use of instructional strategies. This chapter includes an explanation of the research design, along with the population, sample, and sampling procedures. The survey instrument, an Internet survey designed to gather information about Kansas community college faculty members, is described and the measurement tools used are considered. Finally, the data collection procedures are presented, including a discussion of the method of data analysis and the limitations of the research.

Research Design

This study was a quantitative research study designed to gather information through survey responses about Kansas full-time general education community college faculty members and their instructional practices.

Population and Sample

The population chosen for this study consisted of Kansas community college faculty members. For the sample, full-time faculty members in general education subject areas during the fall 2007 semester were selected to participate (n= 731). Only those faculty members identified as full-time in a general education subject area were chosen. The general education subject areas identified were those included in the *Policies and Procedures* manual for the Kansas Board of Regents (1995): anthropology, art, communications, computer science, economics, english, geography, history, math, music, philosophy, psychology, political science, science, sociology, and theater.

Sampling Procedure

Purposive sampling was used to identify the sample for this study. Because the intent of the study was to gather information concerning full-time general education faculty members who teach in Kansas community colleges, all members of the group were identified through faculty lists found on the Internet at the official college Web sites. The number of faculty members identified at each institution varied, from 125 at Butler County Community College to 19 at Fort Scott Community College (as shown in Table 8).

Instrumentation

Several surveys exist to gather a variety of information from community college faculty members (e.g. Matney, 2001). For the purpose of this study, a 13-question survey was constructed to gather the specific information of interest about the pedagogical training and teaching techniques of community college instructors (see Appendix A). The survey questions were developed by the researcher with the assistance of an expert in the field and consultation with other community college educators.

The first six questions of the survey were used to gather basic demographic information about general education faculty members at Kansas community colleges. Question 1 asked where the instructor taught, requiring respondents to select from a list of the 19 Kansas Community Colleges. The second question asked for the instructor's teaching discipline and allowed the respondent to choose from the disciplines listed above in the section describing the sample. Questions 3 and 4 asked how long the instructor had taught at the current institution and at the community college level, respectively. Respondents were asked to select the appropriate response: 1 year, 2 years,

3 to 5 years, 6-10 years, 11-15 years, or more than 15 years. Question 5 also related to community college teaching experience, as instructors were asked to list the courses they had taught. Question 6 asked how many total years the instructor had been teaching, using the same response categories as questions 3 and 4.

Question 7 addressed research question 1, which was about K-12 teaching experience and certification. This question asked if the respondent had taught at the K-12 level, requiring a yes or no response. Question 8, which was used to provide additional descriptive information, asked the instructor to list the state in which he or she had been certified to teach.

Questions 9 and 10 asked respondents about courses in instructional design or pedagogy, addressing research question 2. Question 9 asked the respondents to indicate by a yes or no answer whether they had attended any state, regional, or national conferences for professional development. The responses were divided into four categories: in the discipline, in education, League for Innovation in the Community College Conference, and National Institute for Staff and Organizational Development Conference. The latter two groups are national organizations that focus on improving instruction at the community college level. Question 10 asked the instructor to indicate by a yes or no if he or she had taken any courses in instructional design or pedagogy.

Questions 11 and12 addressed research question 3 by asking about instructional strategies used by the instructors in their general education courses during a semester. Question 11 asked what types of instructional strategies were used in the classroom for general education classes. Respondents were asked to respond yes or no to a list of possible instructional strategies. The strategies included lecture, collaborative learning,

jigsaw, service learning, group projects, group discussions, games, role playing, simulations, Socratic discussions, and student presentations. These strategies were chosen as a sample of possible instructional strategies by the researcher. The next question asked instructors to indicate how much time during a semester they used each instructional strategy listed. Answers were indicated by estimating a percentage of time spent on a strategy, with the total equaling 100%. The final question was an open-ended opportunity for the respondents to comment on their use of instructional strategies.

Measurement

The first series of questions was designed to gather information concerning the background of the instructors. The second part of the survey was designed to gather information concerning the instructional practices of the instructors. The responses to the survey questions were recorded by SurveyMonkey and reported to the researcher as raw data for analysis.

Reliability and Validity

Reliability, according to Johnson and Christensen (2008), refers to the "stability or consistency" (p. 145) of the measurement. This property of a measure is especially important when items are summed or averaged for a single concept because it is important to know that all items are measuring that concept. Because the survey items used in this study each measured an individual concept and so were evaluated separately, reliability was not an issue. Johnson and Christensen defined validity as the appropriateness of the "interpretations, inferences, and actions" (p. 150) that researchers make based on their measurements. The authors more specifically defined content validity as the degree to which measures, such as survey items, "adequately represent" (p.

152) the characteristic being measured. Johnson and Christensen then stated that evaluation of content validity is usually carried out by experts. For this study, content validity was established for the survey with the help of experts in the field of community college education. Modifications suggested by these experts were made to the survey.

Data Collection Procedures

On November 3, 2007, a request for permission to conduct a clinical research study was submitted to the Institutional Research Board of Baker University (Appendix B). Once approval of the proposal was received (Appendix C) in November of 2007, names and e-mail addresses of full-time general education faculty from the 19 Kansas community colleges were gathered from the official college websites. On November 29, 2007, an e-mail was sent to each e-mail address, inviting the instructor to participate in the study, and providing the Internet link to the survey (Appendix D). The survey was housed at SurveyMonkey.com, and responses were received from November 29, 2007 to January 2, 2008.

Data Analysis and Hypothesis Tests

The responses to the survey questions provided data concerning the research questions. Research question 1 was: "What proportion of Kansas community college general education faculty have obtained K-12 certification?" This question was addressed using descriptive statistics. Research question 2, "What proportion of Kansas community college general education faculty have taken a course in instructional design or pedagogy?" was also answered using descriptive statistics. Research question 3, "What instructional strategies are used by Kansas community college general education faculty?" was analyzed through descriptive statistics, both in the number of strategies

identified and the percentage of time each one was used. Additionally, the measure of central tendency of the responses was examined, as the number of instructional strategies used by respondents was compared.

Research questions 4, 5, and 6 asked about the relationship between the information gathered in the previous questions and the use of various instructional methods. The data was analyzed in a variety of ways. Chi-square tests of independence at the .05 significance level were used to determine if a relationship existed between the following variables:

1. The respondent's pedagogical training and the use of various instructional strategies.
2. The respondent's years of service and the use of various instructional strategies. For the purpose of analyzing the data, the responses from the six different categories were arbitrarily collapsed into two groups: 15 years or less and more than 15 years.
3. The respondent's discipline area and the use of various instructional strategies. For the purpose of analyzing the data, the 17 disciplines were collapsed into five general education categories: arts and humanities, math, professional studies, science, and social and behavioral sciences.

Additionally, independent samples *t* tests were used to examine the relationship between the following variables:

1. The presence or absence of pedagogical training and the amount of time used with each instructional method.

2. The years of experience and the amount of time used with each instructional method.

A one-factor ANOVA was used to examine the relationship between the disciplines, as grouped into general education categories, and the amount of time used with each instructional method.

Limitations

The results of this study are limited in that the survey responses included only those faculty members who voluntarily responded to the request for participation. Not all general education faculty members may have received an invitation to participate, because the faculty members invited to participate in the study were identified through department listings of full-time faculty at the community college Web sites. The results are also limited due to the self-reported answers to the survey questions by the respondents. The assumption was made that the responses were truthful.

Summary

This chapter reviewed the research questions and the survey designed to answer those questions, including population and sample, sampling procedures, measurement, data analysis procedures, and limitations. Next, chapter four concentrates on reporting the results of the completed surveys.

Chapter Four

Results

The purpose of this study was to gather information about the training in educational pedagogy and use of instructional strategies of Kansas community college instructors. By better understanding the background and training in educational pedagogy of community college teaching faculty, institutions can focus their professional development programs to improve faculty efforts to present subject area knowledge incorporating a variety of instructional techniques.

Invitations to participate in the survey were sent to Kansas community college full-time, general education instructors. The faculty members were identified by using the instructor lists from each institution's official website. The survey responses were gathered through use of SurveyMonkey, an online survey tool. This chapter presents the results of the research by using descriptive statistics to examine the overall survey responses, as well as to provide answers to the first three research questions relating to the respondents' teaching discipline, K-12 certification, and the instructors' pedagogical training. Hypothesis tests were conducted to examine the last three research questions, relating to instructional strategies used by the respondents and the percentage of time each strategy was used in the classroom.

Descriptive Statistics

Survey Response Rate

The survey consisted of 13 questions that required the respondents to make a selection from a list of possible answers or to respond to an open-ended prompt. Answers to question 1, "Where do you teach?" are presented in Table 8, along with the overall response rate by institution.

Table 8

Number of Surveys Sent and Returned by Institution

	Sent	Returned	Response Rate
Allen County	30	11	37%
Barton County	26	10	38%
Butler County	125	30	24%
Cloud County	31	3	10%
Coffeyville	25	7	28%
Colby	25	9	36%
Cowley County	29	1	3%
Dodge City	28	5	18%
Fort Scott	16	8	50%
Garden City	39	7	18%
Highland	29	5	17%
Hutchinson	50	14	28%
Independence	22	8	36%
Johnson County	94	28	30%
Kansas City Kansas	76	8	11%
Labette County	21	5	24%
Neosho County	23	13	57%
Pratt	18	5	28%
Seward County	24	7	29%
Total Faculty	731	184	25%

Of 731 e-mail invitations to participate in the survey, 184 responses were received, representing a 25% response rate. Responses were received from all 19 Kansas Community Colleges, ranging from one response from one school to 30 responses from another institution. Individual school response rates ranged from 3% of the faculty to 57% of the faculty; two schools had a 50% or higher response rate.

Additional information regarding the survey respondents was received in answer to a question about their length of service at the community college level (see Figure 2). The respondents were very experienced at community college instruction, as 62 of 182, or 34.1% of the respondents had been teaching at the community college level for more than 15 years, as compared to 13 or 7.1 % who had taught only 1 year.

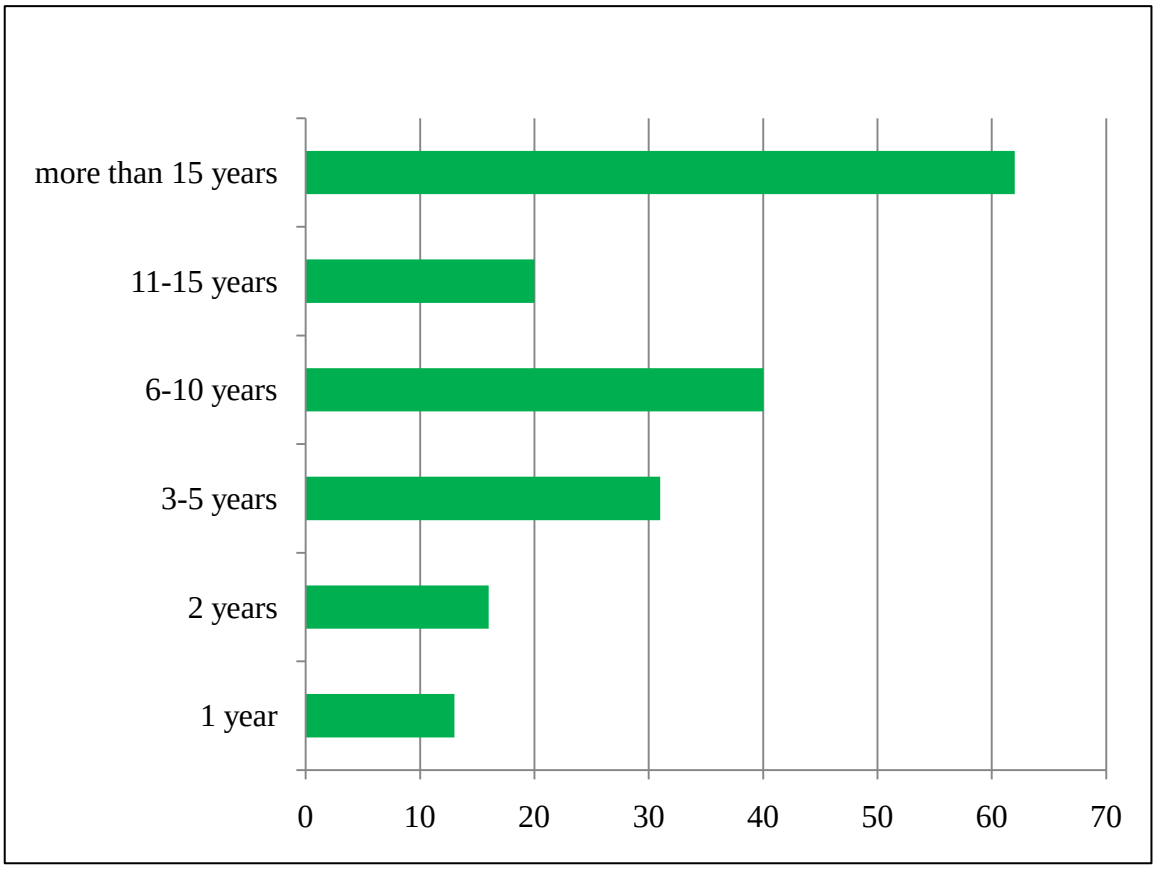

Figure 2. Length of time teaching at community college level.

Information was also gathered about the principal teaching discipline of the survey respondents; the responses are presented in Figure 3. English and science were the most represented disciplines, with 32 or 17.4% each, and foreign language and physical education least represented, with 1 or 0.5% each.

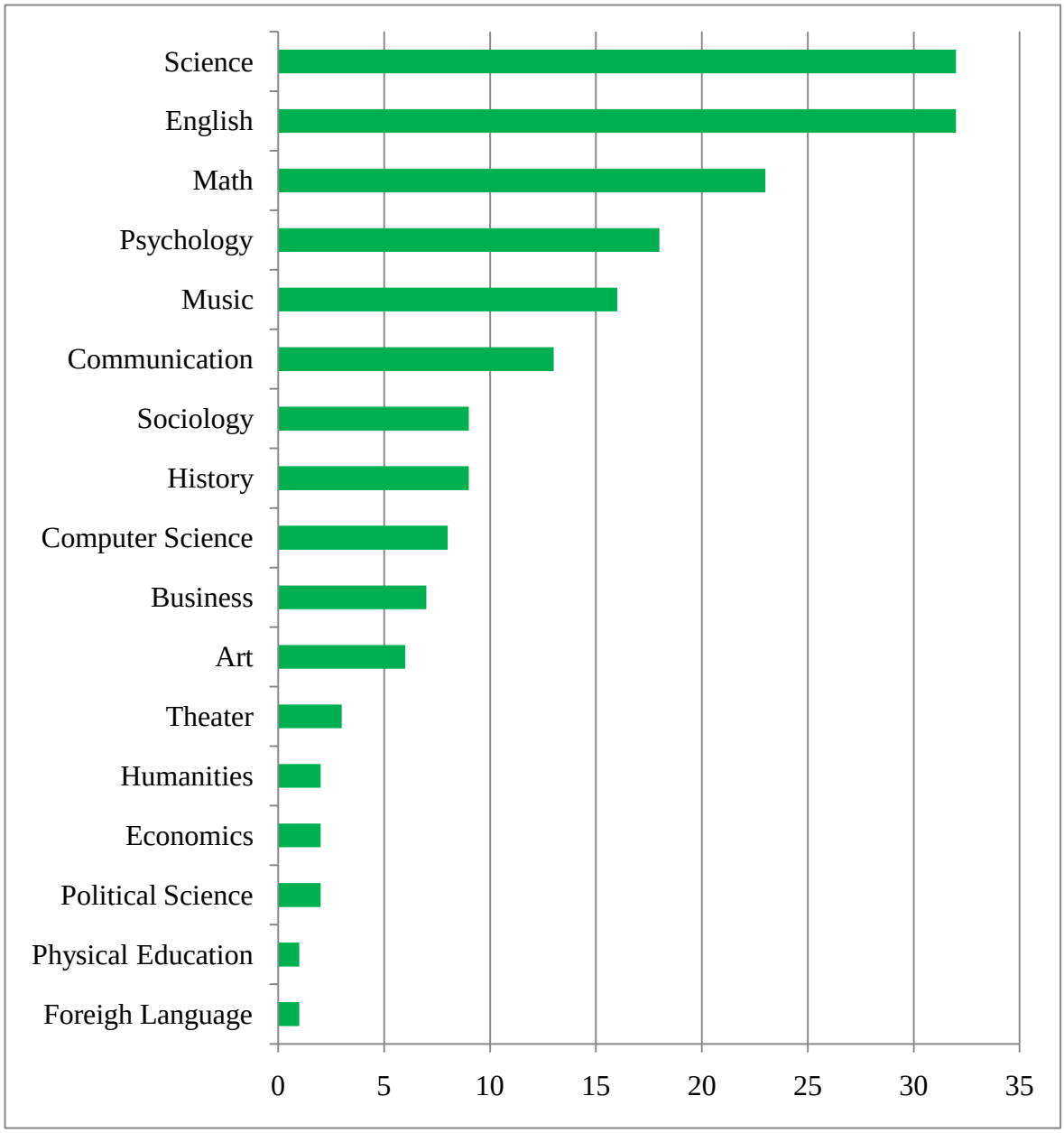

*Figure 3.*Teaching disciplines.

Descriptive Statistics

The first three research questions were addressed by presenting descriptive statistics gathered through the survey responses. Research question 1 asked the proportion of Kansas community college general education faculty that had obtained K-12 certification. This information was collected through the responses to question7, which asked "Have you taught at the K-12 level?" Of the 176 instructors answering this question, half (*n*=87) of the survey respondents reported certification at the K-12 level. A follow-up question asked "If the answer to the previous question was "yes," in what state were you certified to teach at the K-12 level?" Of the 87 respondents answering "yes" to question 7, 65 responses or 75% included "Kansas" in the answers.

Research question 2 asked the proportion of Kansas community college general education faculty who have received pedagogical training. This information was gathered through the responses to question 10, which asked "Have you taken any courses in instructional design or pedagogy?" Of the 172 instructors who responded to this question, just over half (*n*=87) answered they received training in instructional design or pedagogy. While just over half of the community college instructors in Kansas who responded had received training in pedagogy, some faculty members may have gathered information about using instructional strategies from attending conferences. This information was gathered in question 9: "Do you attend any state, regional, or national meetings for professional development?" This multi-part question asked about meetings in the discipline and in education. Additionally, the question asked whether the respondent had attended a conference sponsored by either the League for Innovation in the Community College, an international organization dedicated to

improving community colleges through a focus on learning, or the National Institute for Staff and Organizational Development, an organization devoted to improving teaching and learning at the community college level. The responses are presented in Figure 4. Of the 172 responses to this question, 80.8% of respondents reported they attended meetings within their disciplines, while 53.5% reported attending meetings in education.

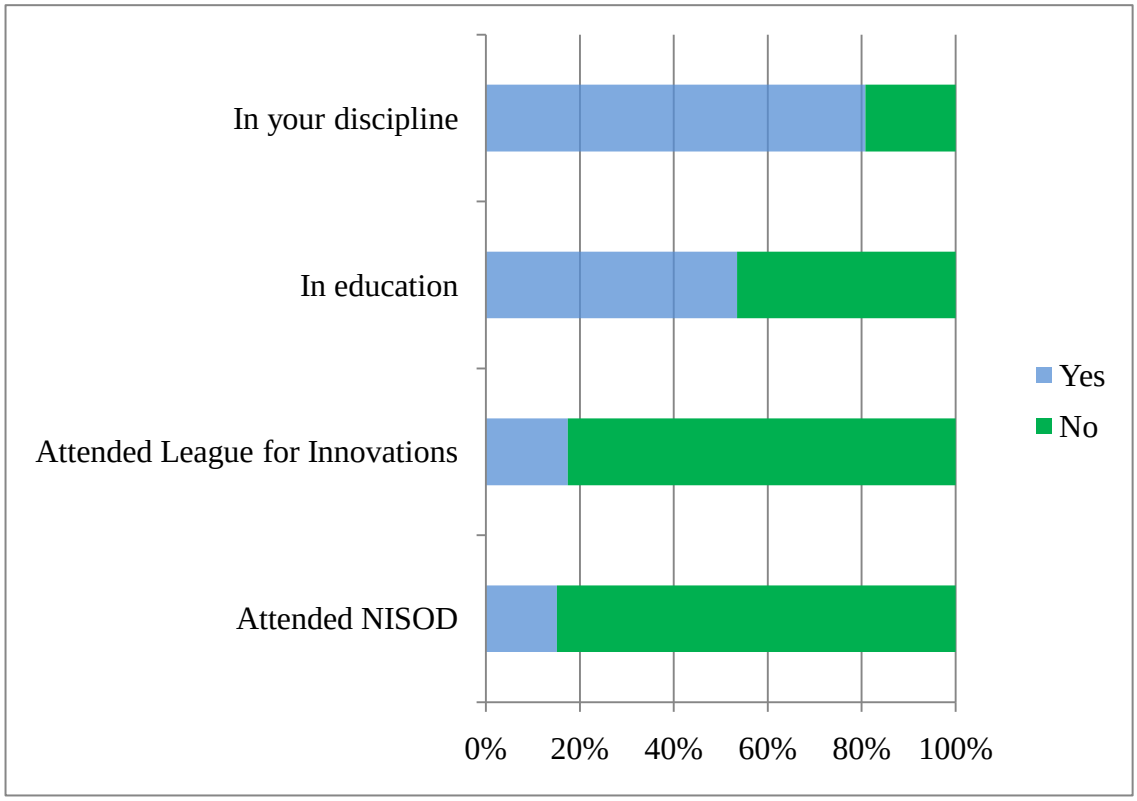

Figure 4. Professional development meetings.

When asked to identify the organization that sponsored the professional development meeting, 34 respondents listed a variety of organizations. Thirteen respondents listed receiving professional development at the community college where they were employed. Other sponsoring organizations included: National Council of Teachers of Mathematics. National Science Teachers Association, National Council for the Social Studies, American Sociological Association, and National Council of Teachers

of English. Two respondents listed the National Learning Communities Conference. At the local level, organizations included Midwest Sociological Society, Kansas State Historical Society, and the Kansas Association of Teachers of English.

Research question 3 asked what instructional strategies were used by Kansas community college general education faculty. This information was gathered through the responses to question 10, which asked survey respondents to indicate from a list of strategies, which instructional strategies they used in their classrooms. The responses are presented in Figure 5. Lecture was clearly the most commonly used strategy, with 98.2% of the respondents marking "yes"; in contrast only 9.8% of respondents said "yes" to using Jigsaw. Respondents indicated an average use of 6.23 instructional strategies. The

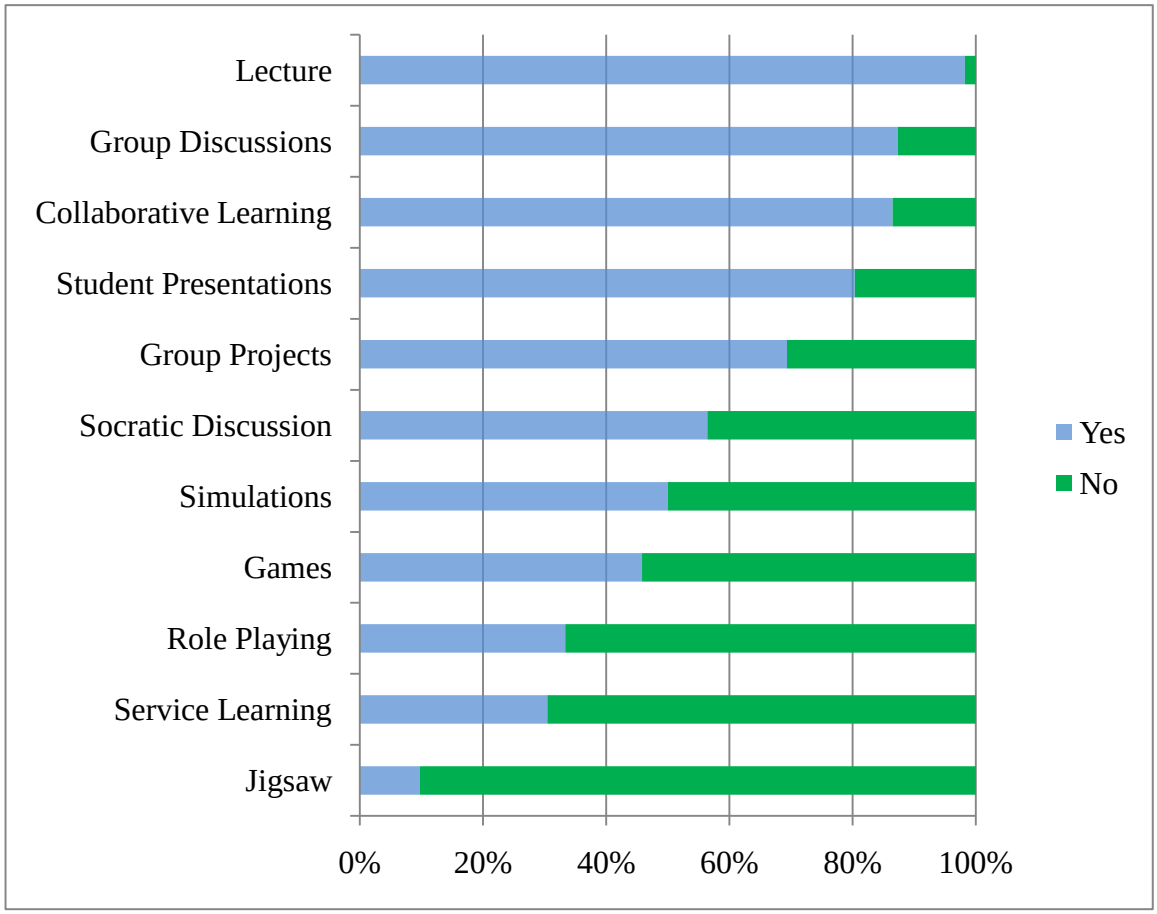

Figure 5. Instructional strategies used.

range of answers was from one instructional strategy to all 11 listed, with six strategies as the mode; 10 respondents identified using one or two instructional strategies, while 10 respondents indicated using 10 or all 11 instructional strategies.

Another question regarding instructional strategies was asked when respondents indicated how much time during a semester each strategy was used, based on an estimate of the percentage of time spent on a strategy during a semester. Again, lecture was the clear leader, with a response average of 47.66% of the time; 17 of the 135 respondents listed using lecture 80% or more of the time. Two respondents indicated using lecture 100%. The results are presented in Figure 6.

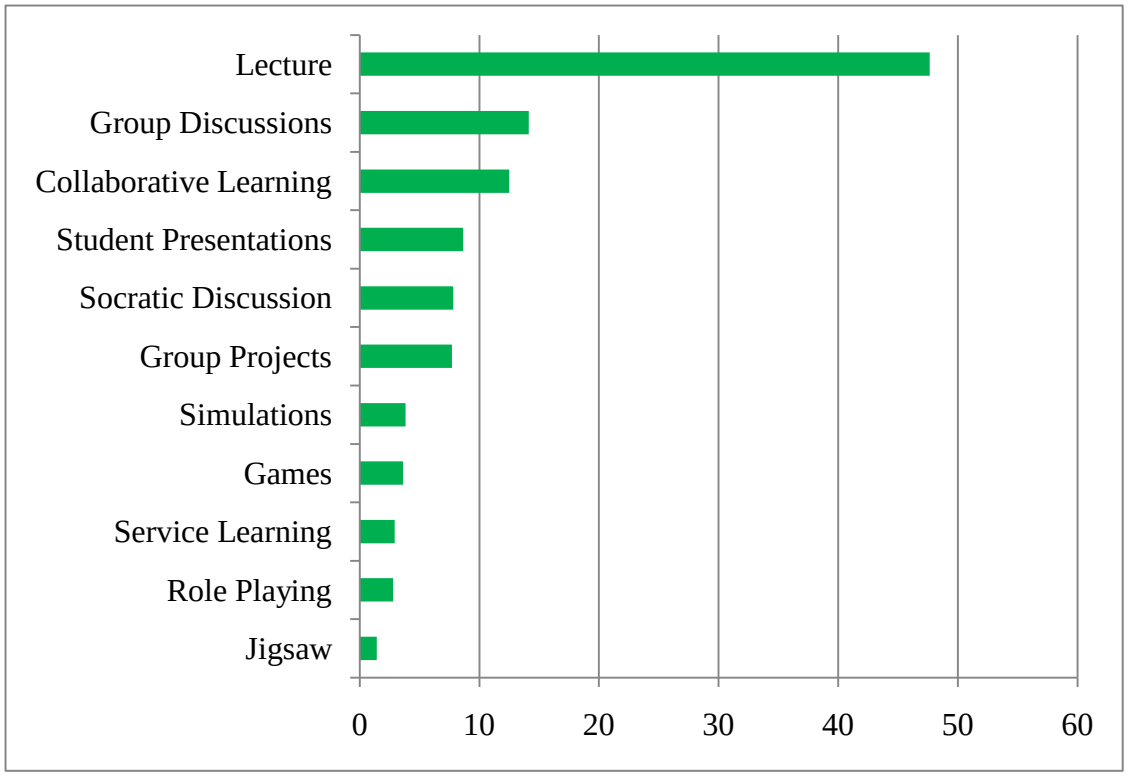

Figure 6. Average percent of time spent on instructional strategies.

There was an opportunity in the survey for respondents to comment about their use of instructional strategies in the classroom; 59 instructors left comments. Sixteen

comments referenced the use of a variety of instructional methods. Several of the comments described the respondent's use of multiple strategies:

- "I attempt to bring in various teaching techniques to best accommodate the different learning styles."
- "I'm working hard to vary them from lecture."
- "I try to change activities/strategies every 10 minutes . . . so I employ a lot."

One respondent explained,

> I believe that active learning is very important. I use a variety of learning techniques to maintain student attention and to increase student retention. Every class period contains more than one type of instructional strategy. For example, 15 minutes of lecture paired with a group project and group discussion. Since I teach a lot of writing courses, I also give many 5-10 minute, in-class writing assignments.

Or as another instructor responded, "Whatever works."

Almost as many respondents, 14, discussed the use of lecture as a teaching strategy. These respondents were divided into two different groups: those who used lecture but incorporated other instructional strategies (5 instructors), and those who justified their use of lecture as the primary instructional strategy (9 instructors). The first group responded with statements such as "Lectures are open to class questions and discussions" and "the 'lecture' is more of a Q&A with students taking part." One instructor explained,

> Lecture is the primary basis for my general ed. instruction; because it is music appreciation we spend a good amount of time engaging music [sic] through active

> listening, but much of the material and terminology requires explaination [sic]; discussion is also very important because it encourages student thought and participation.

While lecture was not the only means of instruction for these respondents, lecture did play a major role in their responses.

The second group wrote explanations that justified the reliance on lecture as the principal means of instruction. The primary reason for the reliance on lecture was time:

- "For anatomy and phsiology [sic] we are cramming nearly 2 ½ courses into one semester."
- "I still rely on lecture for core contetn [sic] responsibility."
- "At the introduction level there typically is more structure and lecture as students must learn the basis [sic] before higher levels of learning can occur."

Two instructors specifically explained their use of lecture as a result of the challenge of the math curriculum at the community college level, with many competencies to "cover," leaving "little time for using some of the strategies that will help students learn a concept better..." Finally, one respondent put some of the blame on the students themselves, stating "I would like to incorporate other strategies, but my students' motivation outside the classroom ends up requiring me to spend almost all of my time lecturing. It's a frustrating situation."

More insight can be gained from the data regarding the use of various instructional methods in the classroom by comparing the number of times a specific group of instructors responded "yes" to using one of the instructional strategies. The measure of central tendency was determined by counting the number of times "yes" was

answered to the instructional strategies listed in question 11. Instructors who answered they had not received pedagogical training reported using an average of 5.86 instructional strategies (see Table 9); instructors who had received pedagogical training used an average of 6.66 strategies.

Table 9

Mean Number of Strategies Used Sorted by Pedagogical Training

Pedagogical Training	Number of Faculty	Mean Strategies Used	*SD*
No Pedagogical Training	85	5.86	0.228
Pedagogical Training	86	6.66	0.244
Total	171	6.23	2.581

Faculty with 1 year of service reported using an average of 5.00 instructional strategies, as seen in Table 10; faculty with 2 years of service reported an average of 7.08 instructional strategies used. The number of instructional strategies used dropped steadily after 2 years of service, as the length of time increased. Faculty with more than 15 years of service used an average of 5.92 strategies.

Table 10

Mean Number of Strategies Used Sorted by Years of Service

Years of Service	Number of Faculty	Mean Strategies used	*SD*
1 year of service	5	5.00	1.871
2 years of service	13	7.08	2.060
3-5 years of service	30	6.37	2.544
6-10 years of service	34	6.76	2.560
11-15 years of service	30	5.97	2.270
More than 15 years of service	61	5.92	2.785
Total	172	6.23	2.581

When looking at the responses from the 17 disciplines, several disciplines were grouped together based on five general education categories used by Kansas Regents institutions to determine transfer equivalencies (Table 11). This grouping of individual disciplines into general education categories allowed the number of responses in each category to be adequate for chi square analysis.

Table 11

Disciplines by General Education Category

Discipline	General Education Category
Art	Arts and Humanities
Music	Arts and Humanities
History	Arts and Humanities
Humanities	Arts and Humanities
Communication	Arts and Humanities
English	Arts and Humanities
Foreign Language	Arts and Humanities
Math	Math
Business	Professional Studies
Computer Science	Professional Studies
Science	Science
Economics	Social Science
Political Science	Social Science
Psychology	Social Science
Sociology	Social Science

When grouped by general education categories, the results indicated that social science instructors used an average of 6.96 instructional strategies in their classrooms, as reported in Table 12. Arts and humanities instructors used an average of 6.62 instructional strategies. Math instructors used an average of 4.30 instructional strategies.

Table 12

Mean Number of Strategies Used Sorted by General Education Categories

General Education Discipline	Number of Faculty	Mean Strategies used	*SD*
Arts and Humanities	79	6.62	1.682
Math	23	4.30	1.870
Professional Studies	15	5.80	3.121
Science	26	6.15	2.167
Social Science	28	6.96	2.531
Total	172	6.23	2.581

Hypothesis Testing

Analysis for the last three research questions went beyond descriptive statistics to examine if any of the specified variables were related. For each question, the data were analyzed in two ways. First, chi-square tests of independence were utilized to determine if data showed a statistically significant difference between the observed number of responses in a category and the expected results. The independent variables used were pedagogical training, years of service, and general education categories, respectively. Of these, each independent variables were compared with the use of each of the 11 instructional strategies. Second, the independent variables of pedagogical training and years of service were compared to the percentage of time each instructional strategy was used through independent sample *t* tests to determine if the differences between two groups (defined by pedagogical training and years of service) were significant. The

independent variable of general education category was compared to the percentage of time used on each instructional strategy through a one-factor ANOVA to determine if the difference in the mean amount of time a strategy was used for instructors in each general education category was significantly different. The resulting analyses are presented in the order of the research questions.

Research question 4 examined the relationship between the pedagogical training of Kansas community college faculty and their use of the various instructional strategies. To answer this question, the responses to question 10, about the training in instructional design or pedagogy and question 12, concerning whether the instructor used each instructional strategy, were analyzed. Chi-square tests of independence were used to test for a relationship between the pedagogical training of instructors and the use of each of the 11 instructional strategies. The results of the analyses involving three strategies indicated a statistically significant relationship, as seen in Tables 13, 14 and 15. The relationship between pedagogical training and the use of the jigsaw method was statistically significant ($\chi^2 = 4.247$, $df = 1$, $p = .039$). Analysis of the adjusted residuals revealed that 11 teachers with pedagogical training responded they use the Jigsaw method, which was more than expected by chance ($e = 7.3$), and of the teachers with no pedagogical training, 65 responded they did not use the Jigsaw method, which was more than expected by chance ($e = 61.3$).

The relationship between pedagogical training and the use of group projects was statistically significant ($\chi^2 = 3.968$, $df = 1$, $p = .046$). Analysis of the adjusted residuals revealed that 62 teachers with pedagogical training responded they used group projects, which was more than expected by chance ($e = 56.2$), and of the teachers with no

Table 13

Significant Relationship Between Pedagogical Training and the Use of Jigsaw

	Use Jigsaw	Do Not Use Jigsaw	Total
Pedagogical Training			
Observed	11.0	64.0	75.0
Expected (*e*)	7.3	67.7	
No Pedagogical Training			
Observed	3.0	65.0	68.0
Expected (*e*)	6.7	61.3	
Total	14.0	129.0	143.0

pedagogical training, 30 responded they did not use group projects, which was more than expected by chance (*e* = 24.2).

Table 14

Significant Relationship Between Pedagogical Training and the Use of Group Projects.

	Use Group Projects	Do Not Use Group Projects	Total
Pedagogical Training			
Observed	62.0	19.0	81.0
Expected (*e*)	56.2	24.8	
No Pedagogical Training			
Observed	49.0	30.0	79.0
Expected (*e*)	54.8	24.2	
Total	111.0	49.0	160.0

The relationship between pedagogical training and the use of student presentations was statistically significant ($\chi^2 = 4.361$, $df = 1$, $p = .037$). Analysis of the adjusted residuals revealed that 72 teachers with pedagogical training responded they used student presentations, which was more than expected by chance ($e = 66.7$), and of the teachers with no pedagogical training, 21 responded they did not use student presentations, which was more than expected by chance ($e = 15.7$).

Table 15

Significant Relationship Between Pedagogical Training and the Use of Student Presentations

	Use Student Presentations	Do Not Use Student Presentations	Total
Pedagogical Training			
Observed	72.0	11.0	83.0
Expected (*e*)	66.7	16.3	
No Pedagogical Training			
Observed	59.0	21.0	80.0
Expected (*e*)	64.3	15.7	
Total	131.0	32.0	163.0

There was no significant relationship found between pedagogical training and the other instructional strategies, as shown in Table 16. The overall results of the chi-square tests of independence indicated a relationship between pedagogical training and the use of three of the instructional strategies. More instructors who had received pedagogical training used jigsaw, group projects, and student presentations as instructional strategies in their classrooms than expected by chance.

Table 16

Nonsignificant Relationship Between Pedagogical Training and the Use of Various Classroom Strategies

	χ^2	*df*	*pvalue*
Lecture	.364	1	.546
Collaborative Learning	2.156	1	.142
Service Learning	1.939	1	.164
Group Discussion	.577	1	.448
Games	.536	1	.464
Role Playing	.013	1	.908
Simulations	.422	1	.516
Socratic Discussions	.473	1	.492

Independent samples *t* tests were used to test for a relationship between the pedagogical training of the instructors and the percentage of time each of the 11 instructional strategies were used. The difference in the average amount of time lecture was used between those with pedagogical training and those without pedagogical training was statistically significant ($t = -2.514$, $df = 133$, $p = .013$). Teachers with pedagogical training, on average, reported using lecture ($M = 42.819$) significantly less than those with no pedagogical training ($M = 53.191$). The difference in the average amount of time collaborative learning was used between those with pedagogical training and those without pedagogical training was statistically significant ($t = 2.526$, $df = 112$, $p = .013$).

Teachers with pedagogical training, on average, reported using collaborative learning (M = 14.78) significantly more than did those with no pedagogical training (M = 9.69). The difference in the average amount of time service learning was used between those with pedagogical training and those without pedagogical training was marginally significant (t = 1.766, df = 67, p = .082). Teachers with pedagogical training, on average, reported using service learning (M = 3.829) somewhat more than did those with no pedagogical training (M = 1.607). Nonsignificant findings resulted when comparing the percent of time the other instructional strategies were used between teachers with pedagogical training and teachers without pedagogical training, as shown in Table 17.

Table 17

Nonsignificant t Tests for Pedagogical Training

	t statistic	*df*	*p*value
Jigsaw	1.257	62	.213
Group Projects	.963	102	.338
Group Discussions	.297	117	.767
Games	.205	83	.838
Role Playing	-.304	72	.762
Simulations	.480	81	.647
Socratic Discussions	-.323	86	.747
Student Presentations	1.062	109	.290

The results of the *t* tests indicated a relationship between the pedagogical training and the amount of time instructors used different instructional strategies. Instructors with pedagogical training used lecture significantly less than those without training, and used collaborative learning more than those without training.

Research question 5 examined the relationship between the years of service at the community college level and the use of each of the 11 instructional strategies. To answer this question, the responses to question 4, concerning the length of time the respondent had taught at the community college level, and question 12, concerning whether or not the instructor used each instructional strategy, were analyzed. To simplify the analysis, responses to question 4 were collapsed into two categories: those with 15 years or less experience, and those with more than 15 years of experience. Chi-square tests of independence were used to test for a relationship between the total number of years teaching at the community college level and the use of each of the different instructional strategies. The results of the analysis of one strategy indicated a statistically significant relationship. The relationship between years of service and the use of Socratic discussion was statistically significant ($\chi^2 = 4.894$, $df = 1$, $p = .027$), as seen in Table 18.

Analysis of the adjusted residuals revealed that 44 teachers with 15 years or less of experience responded they used the Socratic method, which was more than expected by chance ($e = 37.2$) and of the teachers with more than 15 years of experience, 46 responded they did not use the Socratic method, which was more than expected by chance ($e = 39.2$).

Table 18

Significant Relationship Between Years of Teaching and the Use of Socratic Discussion

	Use Socratic	Do Not Use Socratic	Total
15 years or less			
Observed	44.0	22.0	66.0
Expected	37.2	28.8	
More than 15 years			
Observed	44.0	46.0	90.0
Expected	50.8	39.2	
Total	88.0	68.0	156.0

There was no significant relationship found between years of service and the other instructional strategies, as seen in Table 19. The results of the chi-square tests of independence indicated a relationship between years of service and the use of one instructional strategy. More instructors who had taught for 15 or less years used Socratic discussions as an instructional strategy in their classrooms than expected by chance. However, there was no statistical relationship between years of service and the use of the other instructional strategies.

Independent samples *t* tests were used to test for a relationship between the total number of years teaching and the percentage of time each of the 11 instructional strategies were used. The difference in the average amount of time role playing was used

between those with 15 or less years of teaching experience and those with more than 15 years of teaching experience was statistically significant (t = -2.525, df = 72, p = .014).

Table 19

Nonsignificant Relationship Between Years of Teaching and the Use of Various Classroom Strategies

	χ^2	*df*	*p*value
Lecture	2.190	1	.139
Collaborative Learning	.300	1	.584
Jigsaw	.279	1	.597
Service Learning	.102	1	.750
Group Projects	.028	1	.867
Group Discussion	1.671	1	.196
Games	.565	1	.452
Role Playing.	.668	1	.414
Simulations	.432	1	.511
Student Presentations	.047	1	.827

Teachers with 15 years or less years of teaching experience, on average, reported using role playing (M = 1.68) significantly less than did those with more than 15 years experience (M = 3.58). The difference in the average amount of time Socratic discussion

was used between those with 15 or less years of teaching and those with more than 15 years of teaching was marginally significant (t = 1.577, df = 86, p = .118). Teachers with 15 or fewer years of teaching, on average, reported using Socratic discussion (M = 9.62) somewhat more than those with more than 15 years (M = 6.49). Nonsignificant findings resulted when comparing the other instructional strategies with teachers based on years of service, as shown in Table 20.

Table 20

Nonsignificant t- tests for Years of Teaching

	t statistic	*df*	*p*value
Lecture	.051	133	.960
Collaborative Learning	-1.04	112	.272
Jigsaw	-.427	62	.671
Service Learning	.798	67	.428
Group Projects	-1.131	102	.261
Group Discussions	1.104	117	.272
Games	.836	83	.405
Simulations	.589	81	.558
Socratic Discussions	1.577	86	.118
Student Presentations	-.271	109	.787

The results of the *t* tests indicated a relationship between years of service and the amount of time instructors used two of the instructional strategies. Instructors with 15 or less years of service used role playing less than expected, and used Socratic discussion somewhat more than expected.

Research question 6 examined the relationship between the general education categories of Kansas community college faculty and the use of multiple instructional strategies. The responses to question 2, which asked about the instructors' teaching discipline, and question 12, concerning whether the instructor used each instructional strategy, were analyzed to answer this question. To simplify the analysis, responses to question 2 were collapsed into the five KBR general education categories to allow examination of larger groups (see table 11 for the general education categories). Chi-square tests of independence were used to test for a relationship between the general education categories and the use of different instructional strategies. The relationship between the general education categories and the use of jigsaw was statistically significant (χ^2 =10.062, *df* = 4, *p* = .039). Although the chi-square test indicated a significant difference between the observed and expected counts, because of the small number of expected responses, the residuals in some cells did not indicate significant differences (see Table 21). Three groups approached a statistically significant difference between the observed and expected counts. Analysis of the adjusted residuals revealed:

- Two teachers with from arts and humanities responded they used the jigsaw method, which was less than expected by chance (*e* = 6.0), while 64 said they did not use jigsaw, which was more than expected by chance (*e* = 60.0).

- Three instructors from professional studies responded they used the jigsaw method, which was more than expected by chance (*e* =1.2), while 10 said they did not use jigsaw, which was less than expected by chance (*e* = 11.8).
- Four instructors from social and behavioral sciences responded they used the jigsaw method, which was more than expected by chance (*e* =1.8), while 16 said they did not use jigsaw, which was less than expected by chance (*e* = 18.2).

Table 21

Contingency Table for General Education Categories and Use of Jigsaw

	Use Jigsaw	Do Not Use Jigsaw	Total
Arts & Humanities			
Observed	2.0	64.0	66.0
Expected	6.0	60.0	
Math			
Observed	1.0	21.0	22.0
Expected	2.0*	20.0	
Professional Studies			
Observed	3.0	10.0	13.0
Expected	1.2*	11.8	
Science			
Observed	3.0	18.0	21.0
Expected	1.9*	19.1	
Social & Behavioral Sciences			
Observed	4.0	16.0	20.0
Expected	1.8*	18.2	
Total	13.0	129.0	142.0

Note. * Expected count less than 5

The relationship between the general education categories and the use of service learning was statistically significant ($\chi^2 = 13.556$, $df = 4$, $p = .009$). Although the chi-square test indicated a significant difference between the observed and expected counts, because of the small number of expected responses, the residuals did not indicate significant differences. One group approached a statistically significant difference between the observed and expected counts, as seen in Table 22. Analysis of the adjusted

Table 22

Contingency Table for General Education Categories and Use of Service Learning

	Use Service Learning	Do Not Use Service Learning	Total
Arts & Humanities			
Observed	23.0	47.0	70.0
Expected	21.5	48.5	
Math			
Observed	1.0	21.0	22.0
Expected	6.7	15.3	
Professional Studies			
Observed	7.0	5.0	12.0
Expected	3.7*	8.3	
Science			
Observed	5.0	17.0	22.0
Expected	6.7	15.3	
Social & Behavioral Sciences			
Observed	10.0	14.0	24.0
Expected	7.4	16.6	
Total	46.0	104.0	150.0

Note. * Expected count less than 5

residuals revealed that only one teacher from math reported the use of service learning, which was less than expected by chance (e = 6.7), while 21 said they did not use service learning, which was more than expected by chance (e = 15.3).The relationship between the general education categories and the use of group projects was statistically significant (χ^2 = 9.767, df = 4, p = .045), as shown in Table 23. Analysis of the adjusted residuals

Table 23

Contingency Table for General Education Categories and Use of Group Projects

	Use Group Projects	Do Not Use Group Projects	Total
Arts & Humanities			
Observed	55.0	18.0	73.0
Expected	50.5	22.5	
Math			
Observed	9.0	13.0	22.0
Expected	15.2	6.8	
Professional Studies			
Observed	10.0	4.0	14.0
Expected	9.7	4.3*	
Science			
Observed	18.0	7.0	25.0
Expected	17.3	7.7	
Social & Behavioral Sciences			
Observed	18.0	7.0	25.0
Expected	17.3	7.7	
Total	110.0	49.0	159.0

Note. * Expected count less than 5

revealed that 9 teachers from math responded they used group projects, which was less than expected by chance (e = 15.2), while 13 said they did not use group projects, which was more than expected by chance (e = 6.8).

The relationship between the general education categories and the use of group discussion was statistically significant (χ^2 = 8.880, df = 4, p = .000), as shown in Table 24. Analysis of the adjusted residuals revealed that 14 teachers from math responded

Table 24

Contingency Table for General Education Categories and Use of Group Discussion

	Use Group Discussion	Do Not Use Group Discussion	Total
Arts & Humanities			
Observed	78.0	1.0	79.0
Expected	68.9	10.1	
Math			
Observed	14.0	9.0	23.0
Expected	20.1	2.9*	
Professional Studies			
Observed	10.0	3.0	13.0
Expected	11.3	1.7*	
Science			
Observed	18.0	6.0	24.0
Expected	20.9	3.1*	
Social & Behavioral Sciences			
Observed	24.0	20.	260.
Expected	22.7	3.3*	
Total	144.0	21.0	165.0

Note. * Expected count less than 5

they did used group discussion, which was less than expected by chance (*e* = 20.1), while 9 said they did not use group discussion, which was more than expected by chance (*e* = 2.9).

The relationship between the general education categories and the use of role playing was statistically significant (χ^2 = 18.108, *df* = 4, *p* = .001), as shown in Table 25.

Table 25

Contingency Table for General Education Categories and Use of Role Playing

	Use Role Playing	Do Not Use Role Playing	Total
Arts & Humanities			
Observed	24.0	46.0	70.0
Expected	23.5	46.5	
Math			
Observed	2.0	20.0	22.0
Expected	7.4	14.6	
Professional Studies			
Observed	6.0	7.0	13.0
Expected	4.4*	8.6	
Science			
Observed	4.0	18.0	22.0
Expected	7.4	14.6	
Social & Behavioral Sciences			
Observed	14.0	8.0	22.0
Expected	7.4	14.6	
Total	50.0	99.0	149.0

Note. * Expected count less than 5

Analysis of the adjusted residuals revealed that two teachers from math responded they used role playing, which was less than expected by chance (e = 7.4), while 20 said they did not use role playing, which was more than expected by chance (e = 14.6). In addition, 14 teachers from social & behavioral science responded they used role playing, which was more than expected by chance (e = 7.4), while 8 said they did not use role playing, which was less than expected by chance (e = 14.6).

The relationship between the general education categories and the use of simulations was statistically significant (χ^2 = 18.237, df = 4, p = .001), as shown in Table 26. Analysis of the adjusted residuals revealed that 21 teachers from science responded they used simulations, which was more than expected by chance (e = 12.6), and four teachers from science responded they did not use simulations, which was less than expected by chance (e = 12.4).

Table 26

Contingency Table for General Education Categories and Use of Simulations

	Use Simulations	Do Not Use Simulations	Total
Arts & Humanities			
Observed	29.0	42.0	71.0
Expected	25.7	35.3	
Math			
Observed	7.0	14.0	21.0
Expected	10.6	10.4	
Professional Studies			
Observed	5.0	7.0	12.0
Expected	6.0	6.0	
Science			
Observed	21.0	4.0	25.0
Expected	12.6	12.4	
Social & Behavioral Sciences			
Observed	14.0	8.0	22.0
Expected	11.1	10.9	
Total	76.0	75.0	151.0

The relationship between the general education categories and the use of Socratic discussion was statistically significant ($\chi^2 = 25.774$, $df = 4$, $p = .000$); see Table 27.

Table 27

Contingency Table for General Education Categories and Use of Socratic Discussion

	Use Socratic Discussion	Do Not Use Socratic Discussion	Total
Arts & Humanities			
Observed	50.0	23.0	73.0
Expected	41.4	31.6	
Math			
Observed	4.0	18.0	22.0
Expected	12.5	9.5	
Professional Studies			
Observed	5.0	8.0	13.0
Expected	7.4	5.6	
Science			
Observed	10.0	13.0	23.0
Expected	13.1	9.9	
Social & Behavioral Sciences			
Observed	19.0	5.0	24.0
Expected	13.6	10.4	
Total	88.0	67.0	155.0

Analysis of the adjusted residuals revealed that four teachers from math responded they used Socratic discussion, which was less than expected by chance (e = 12.5) , and 18 teachers from math responded they did not use Socratic discussion, which was more than expected by chance (e = 9.5).

The relationship between the general education categories and the use of student presentations was statistically significant (χ^2 = 32.175, df = 4, p = .000), as shown in Table 28. Analysis of the adjusted residuals revealed that nine teachers from math

responded they used student presentations, which was less than expected by chance (*e* = 18.5). In addition, 14 teachers from math responded they did not use student presentations, which was more than expected by chance (*e* = 4.5) and six teachers from arts & humanities responded they did not use student presentations, which was more than expected by chance (*e* = 15.0).

Table 28

Contingency Table for General Education Categories and Use of Student Presentations

	Use Student Presentations	Do Not Use Student Presentations	Total
Arts & Humanities			
Observed	70.0	6.0	76.0
Expected	61.0	15.0	
Math			
Observed	9.0	14.0	23.0
Expected	18.5	4.5*	
Professional Studies			
Observed	12.0	2.0	14.0
Expected	11.2	2.8	
Science			
Observed	18.0	6.0	24.0
Expected	19.3	4.7*	
Social & Behavioral Sciences			
Observed	21.0	4.0	25.0
Expected	20.1	4.9*	
Total	130	32	152

Note. *Expected count less than 5

There was no significant relationship found between general education categories and the use of lecture, collaborative learning, or games, as seen in Table 29.

Table 29

Nonsignificant Relationship Between General Education Categories and the Use of Various Classroom Strategies.

	χ^2	*df*	*p*value
Lecture	3.710	4	.447
Collaborative Learning	6.075	4	.194
Games	4.874	4	.300

The overall results of the chi-square tests of independence indicated a relationship between the general education categories and the use of eight instructional strategies. Arts and humanities instructors were less likely to use jigsaw as an instructional strategy in their classrooms, but more likely to use student presentations than expected by chance. Instructors from math were less likely to use service learning, group projects, group discussions, role playing, Socratic discussion, or student presentations than expected by chance. Professional studies instructors were less likely to use jigsaw than expected by chance. Science instructors from were more likely to use simulations than expected by chance. Social and behavioral science instructors were more likely to use jigsaw and role playing than expected by chance.

To determine if there was a statistically significant difference in the average amount of time utilized by the five general education categories for each instructional strategy, a one-factor analyses of variance (ANOVA) was conducted using the general

education categories as the independent variable. The results of the ANOVA showed six instructional strategies with significant differences, as seen in Table 30.

Table 30

Comparison of Means for Instructional Strategies Indicating Significance

Strategy		*MS*	*F*	*p*
Group Discussion	Between Groups	313.977	3.197	0.016
	Within Groups	98.195		
Lecture	Between Groups	4312.990	8.934	0.000
	Within Groups	4823.751		
Simulations	Between Groups	122.136	6.585	0.000
	Within Groups	18.549		
Service Learning	Between Groups	104.463	4.634	0.002
	Within Groups	22.541		
Socratic Discussion	Between Groups	208.331	2.594	0.042
	Within Groups	80.302		
Student Presentations	Between Groups	169.347	2.733	0.033
	Within Groups	61.965		

Five instructional strategies showed no significant differences; they are shown in Table 31.

Table 31

Comparison of Means for Instructional Strategies Indicating No Significance

Strategy		*MS*	*F*	*p*
Collaborative Learning	Between Groups	181.256	1.526	.200
	Within Groups	118.752		
Games	Between Groups	31.422	1.929	.114
	Within Groups	16.293		
Group Projects	Between Groups	82.744	1.359	.254
	Within Groups	60.885		
Jigsaw	Between Groups	30.287	1.270	.292
	Within Groups	23.848		
Role Playing	Between Groups	11.382	1.033	.397
	Within Groups	11.017		

For group discussion, the outcome of the one-factor ANOVA was a statistically significant difference between at least two of the general education categories in the mean amount of time they used the strategy ($F_{4, 113} = 3.197$, $p = .016$), as shown in Table 32.

Table 32

ANOVA Table of Means for Group Discussion

General Education Categories	*M*	*SD*	*N*
Arts and Humanities	17.0000	11.82779	59
Math	9.5714	6.29437	7
Professional Studies	9.0714	9.50679	14
Science	13.9524	7.31762	21
Social and Behavioral Science	10.1765	5.58161	17

The Tukey Honestly Significant Difference (HSD) was the post hoc test chosen; it was used to compare all possible combinations of the means, indicating a marginally significant difference. For group discussion, the HSD (p = .062) comparing arts and humanities (M = 17.00) with professional studies (M = 9.071), indicated a marginally significant difference. This means that faculty in the arts and humanities, on average, spent somewhat more time using group discussion than do faculty in professional studies. For lecture, the outcome of the one-factor ANOVA was a statistically significant difference between at least two of the general education categories in the mean amount of time they used the strategy ($F_{4, 129}$ = 8.934, p = .000), as shown in Table 33. The Tukey HSD was used to compare all possible combinations of the means, indicating several statistically significant differences. For lecture, there were two significant findings. The HSD (p = .000) comparing professional studies (M = 71.611) with arts and humanities (M = 37.639) showed that professional studies instructors used lecture more than arts and

humanities instructors. The HSD (p=.014) comparing professional studies (M = 71.611) with science (M = 49.391) showed that professional studies instructors used lecture more than science instructors. There were also two results indicating a marginally significant difference. The HSD (p = .053) comparing social science (M = 53.636) with arts and humanities (M = 37.639), showed that social science instructors used lecture more than arts and humanities instructors. The HSD (p = .057) comparing social science (M = 52.636) with professional studies (M = 71.611) showed that social science instructors used lecture less than professional studies instructors.

Table 33

ANOVA Table of Means for Lecture

General Education Categories	*M*	*SD*	*N*
Arts and Humanities	37.639	19.604	61
Math	52.000	27.305	10
Professional Studies	71.611	13.146	18
Science	49.391	25.724	23
Social and Behavioral Science	52.636	26.736	22

For service learning, the outcome of the one-factor ANOVA was a statistically significant difference between at least two of the general education categories in the mean amount of time they used service learning ($F_{4, 63}$ = 4.634, p = .002), as shown in Table 34. The Tukey HSD was used to compare all possible combinations of the means, indicating several statistically significant differences. For service learning, four significant findings

emerged: the HSD (p = .001) comparing math (M = 13.333) with professional studies (M = .455), the HSD (p = .003) comparing math (M = 13.333) with arts and humanities (M = 2.629), the HSD (p = .010) comparing math (M – 13.333) with social science (M = 2.143), and the HSD (p = .031) comparing math (M = 13.333) with science (M = 4.167). This means that for service learning, the math faculty, on average, spent more time using the strategy than did the arts and humanities, professional studies, social science, or science faculty.

Table 34

ANOVA Table of Means for Service Learning

General Education Categories	*M*	*SD*	*N*
Arts and Humanities	2.629	3.623	35
Math	13.333	15.275	3
Professional Studies	.455	1.508	11
Science	4.167	5.967	12
Social and Behavioral Science	2.142	3.934	7

For simulations, the outcome of the one-factor ANOVA was a statistically significant difference between at least two of the general education categories in the mean amount of time they used simulation ($F_{4, 77}$ = 6.585, p = .000), as shown in Table 35. The Tukey HSD was used to compare all possible combinations of the means, indicating several statistically significant differences. For simulations, three significant findings emerged: the HSD (p = .000) comparing social science (M = 8.438) with arts and humanities (M =

2.054), the HSD (p = .009) comparing social science (M = 8.438) with professional studies (M = 3.071), and the HSD (p = .038) comparing social science (M = 8.438) with science (M = 3.546). This means the social science faculty, on average, spent more time using simulations than did the arts and humanities, professional studies, or science faculty.

Table 35

ANOVA Table of Means for Simulations

General Education Categories	*M*	*SD*	*N*
Arts and Humanities	2.054	3.170	37
Math	6.250	4.787	4
Professional Studies	3.071	5.385	14
Science	3.546	3.110	11
Social and Behavioral Science	8.438	5.910	16

For Socratic discussion, the outcome of the one-factor ANOVA was a statistically significant difference between at least two of the general education categories in the mean amount of time they used Socratic discussion ($F_{4, 82}$ = 2.594, p = .042), as shown in Table 36. The Tukey HSD was used to compare all possible combinations of the means, indicating a statistically significant difference. When examining the time spent using Socratic discussions one significant result emerged: the HSD (p = .033) comparing science (M = 11.529) with professional studies (M = 1.000). This indicated

that the science faculty, on average, spent more time using Socratic discussions than did the professional studies faculty.

Table 36

ANOVA Table of Means for Socratic Discussion

General Education Categories	*M*	*SD*	*N*
Arts and Humanities	8.489	9.219	47
Math	1.667	2.887	3
Professional Studies	1.000	2.108	10
Science	11.529	10.357	17
Social and Behavioral Science	7.700	10.011	10

For student presentations, the outcome of the one-factor ANOVA was a statistically significant difference between at least two of the general education categories in the mean amount of time they used student presentations ($F_{4, 105} = 2.733$, $p = .033$), as shown in Table 37. The Tukey HSD was used to compare all possible combinations of the means, indicating a marginally significant difference. For student presentations, one marginally significant finding emerged: the HSD ($p = .063$) comparing arts and humanities ($M = 10.630$) with professional studies ($M = 4.286$). The results indicated the arts and humanities faculty, on average, spent more time using student presentations than did the professional studies faculty.

Table 37

ANOVA Table of Means for Student Presentations

General Education Categories	*M*	*SD*	*N*
Arts and Humanities	10.630	9.325	54
Math	11.000	8.992	8
Professional Studies	4.286	5.837	14
Science	7.444	6.464	18
Social and Behavioral Science	5.812	3.430	16

Summary

This chapter presented descriptive statistics to answer the first three research questions. The data included survey response rate, years of service at the community college level, teaching discipline, K-12 certification, and the instructors' pedagogical training. The results included the instructional strategies used by the respondents and the percentage of time each strategy was used in the classroom, along with instructor comments about individual use of the strategies.

Research question 4 examined the relationship between pedagogical training and use of multiple instructional strategies. Results of the chi-square tests of independence indicated a relationship between these factors. Instructors who received pedagogical training used less lecture and more collaborative learning and service learning than expected. Research question 5 examined the relationship between years of service and the use of multiple instructional strategies. Instructors with 15 or less years of service

used role playing less and Socratic discussion more than expected. Research question 6 examined the relationship between disciplines (grouped by general education categories) and the use of multiple instructional methods. The resulting analysis showed differences in several of the instructional strategies used by discipline, as grouped by general education categories, as well as the percentage of time some instructional strategies were used.

Chapter five provides a brief overview of the study, including a review of the major findings. It relates the findings to the literature and concludes with implications for action and recommendations for future study.

Chapter Five

Interpretation and Recommendations

This chapter presents a summary of the study, including an overview of the problem, a review of the research questions, and a review of the methodology. The data presented in chapter four is analyzed for major findings. The findings are related to the literature reviewed in chapter two and a discussion of implications for action and suggestions for further research is addressed.

Study Summary

Overview of the Problem

Over 11 million Americans select community colleges for higher education (American Association of Community Colleges, 2010); yet far more is known about the characteristics of the students than about the professional preparation and instructional competencies of the faculty who teach them. Additionally, research about community college instructors indicates the predominant use of lecture as a teaching strategy in the classroom.

Purpose Statement and Research Questions

The purpose of this study was to gather information about the background, training in educational pedagogy, and use of instructional strategies of Kansas community college full-time general education instructors. By better understanding the background and training in educational pedagogy of community college teaching faculty, institutions can maximize student learning by offering professional development programs that assist faculty to incorporate more effective instructional strategies and techniques that compliment what is known about how adults learn best.

Six research questions were investigated in this study. The first three questions focused on gathering descriptive data about Kansas community college general education faculty members concerning their pedagogical training, length of time teaching, and use of instructional strategies. The final three questions looked for a relationship between both pedagogical training, length of service, and the use of 11 instructional methods.

Review of Methodology

Full-time general education Kansas community college faculty members were surveyed to gather basic information about teaching discipline, length of time teaching, pedagogical training, and use of instructional strategies in the classroom. Invitations to participate in the survey were e-mailed to all identified Kansas general education faculty members and the survey was administered through an online survey site. Responses to the survey were tabulated by the online survey service and results were analyzed through descriptive statistics, chi-square tests of equal percentages, *t* tests for dependent means, and one-way ANOVA.

Major Findings

Although the sample included in this study was small, it was possible to draw some conclusions from the data. In response to research question 1, about the proportion of general education faculty who had obtained K-12 teaching certification, half the respondents indicated they had received certification at the K-12 level.

In response to research question 2, about the proportion of general education faculty who had taken a course in instructional design or pedagogy, 51% of instructors indicated they had received said training. Additionally, 81% of the respondents indicated attendance at conferences in their discipline; 54% responded they had attended

conferences about education. These numbers indicated that community college faculty may continue to add to their knowledge base about their subject matter and about teaching by attending conferences as well as taking courses.

Research question 3 asked about the instructional strategies used by Kansas community college instructors. From a list of 11 possible teaching strategies, respondents answered "yes" to the strategies they used. Lecture was the most commonly used strategy, with 98% of the respondents indicating its use; in contrast, only 10% of the respondents used jigsaw as a teaching strategy. When asked the percentage of time each strategy was used during a semester, again, lecture was the clear choice, with an average response of 48% of the time. The three primarily teacher-led strategies—lecture, group discussions, and Socratic discussions—ranked among the top five strategies for percent of time used.

When the number of teaching strategies used was calculated for those with pedagogical training and those with no pedagogical training, the respondents who had received pedagogical training answered "yes" to using more of the instructional strategies than those who had no training. When the number of teaching strategies used was calculated based on years of service, respondents in their first year of service reported use of fewer teaching strategies than any other group. The group using the most teaching strategies was instructors in their second year of service, with number of strategies used dropping as respondents acquired more years of teaching. When the number of teaching strategies used was calculated for each of the general education categories, social science faculty members used the most teaching strategies, followed closely by arts and humanities faculty members. The math faculty used by far the least number of teaching

strategies in their courses. This data indicated there may be a relationship between pedagogical training and the number of instructional strategies used, as well as a relationship between years of service and the number of instructional strategies used. Additionally, the use of multiple instructional strategies appears to be different depending on general education category.

Research question 4 asked about a statistical relationship between pedagogical training and the use of each of the instructional strategies. Analysis of the data showed a significant relationship between having pedagogical training and the use of each of the following strategies: jigsaw, group projects, and student presentations. There was no significant relationship between pedagogical training and the use of any of the other instructional strategies. The data were then analyzed through the use of independent sample *t* tests for a relationship between the presence or absence of pedagogical training and the amount of time participants used each of the different strategies. The results indicated instructors with pedagogical training used collaborative learning and service learning more than did those with no training. Instructors with pedagogical training also used lecture less than did instructors with no pedagogical training. The results illustrated that pedagogical training may have an impact on the amount of time an instructor used various instructional strategies.

Research question 5 asked about a statistical relationship between years of service at the community college level and the use of each of the instructional strategies. Analysis of the data revealed a significant relationship. More instructors with 15 or less years of service used Socratic discussion than expected; fewer instructors with more than 15 years of service used Socratic discussion than expected. There was no significant

relationship between years of service and any of the other instructional strategies. The data were then analyzed for a relationship between years of service and the amount of time each of the different strategies were used. The results indicated instructors with 15 or less years of service used role playing significantly less and used Socratic discussion marginally more, than did instructors with more than 15 years of service. The other nine instructional strategies showed no significant results, suggesting that years of service may have little impact on the amount of time an instructor used various instructional strategies in the Kansas community college classroom.

Research question 6 asked about a statistical relationship between teaching discipline and the use of multiple instructional strategies. To assist in the data analysis, the 17 discipline areas were collapsed into five general education categories. Analysis of the data revealed several significant relationships. Instructors from arts and humanities were more likely to use student presentations, but less likely to use jigsaw than expected. Math faculty members were less likely to use service learning, group projects, group discussions, role playing, Socratic discussions, or student presentations than expected. Professional studies faculty members were less likely to use jigsaw in their classes than expected. Instructors from science were more likely to use simulations, and social and behavioral science instructors were more likely to use jigsaw and role playing in their classrooms than expected. The data were then analyzed for a relationship between each of the general education categories and the average percent of time each strategy was used. Several significant differences were evident. Arts and humanities faculty members, on average, used group discussions and student presentations more than did professional studies faculty members. While it was previously found that math faculty

used service learning less than expected, it was also found that when considering the average percent of time used, math instructors used service learning more than did any other general education category. Professional studies faculty members used lecture more than did arts and humanities and science faculty members, but less than social science faculty members. Science faculty members used Socratic discussions more than did professional studies. Social and behavioral science, on average, used simulations more than did arts and humanities, professional studies, or science. The results suggested differences exist in how much time the various disciplines utilized different instructional strategies in the classroom. More research is needed to determine why such differences were found.

Findings Related to the Literature

The literature about instruction in higher education included discussions of the continued use of lecture as the primary instructional method. The results of this study support that finding. Palmer stated that 88% of faculty use lecture as a primary instructional method (2002, p. 12); this study found 98% of respondents used lecture in their classrooms. Schuetz reported that faculty in his study used 43% of the class time for lecture (2002, p. 40); Outcalt's results showed lecture was used over twice as much as the next used instructional method, class discussion (2002, p. 125). The data from this study supported both of those findings, as it showed instructors used lecture 48% of time during a semester, followed by group discussion, which was used 14% of time during a semester. However, other research showed that the use of multiple instructional strategies is increasing (Campbell, 2009; DeAngelo, et al., 2009). Analysis of the data from this study found the average number of instructional strategies used by faculty was

6.23 of the 11 listed; only 5.4% of the responding instructors used only one or two strategies in the classroom.

The literature about pedagogical training of instructors indicated the number of community college faculty members coming from the ranks of the K-12 system has been declining over the past 30 years (Cohen & Brawer, 2003). Other research indicated instructors are increasingly coming from outside education (Lail, 2005). Analysis of the data in this study showed that in Kansas, half of the general education faculty members surveyed had received state certification to teach in a K-12 system, indicating that to some extent faculty members are still coming to community colleges from the K-12 system.

Terry O'Banion advocated a move from instructors as deliverers of knowledge into facilitators of the learning process. Instruction, according to O'Banion, must address the needs of the learners and offer multiple options for learning (1994). Analysis of the results of this study indicated that instructors used an average of 6.23 instructional strategies. Faculty members in some disciplines utilized more class time employing some strategies than others; in particular, math instructors used the fewest average number of instructional strategies.

Conclusions

Implications for Action

Generalizing beyond this study is somewhat compromised by the small sample size. However, this study provided information that can help community colleges understand the pedagogical training of faculty members who educate students. With this knowledge, community colleges can consider training in pedagogical and instructional

design in addition to subject matter expertise when hiring new faculty members. Additionally, community college faculty who lack formal training in educational theory and practices may need assistance from their institutions to learn how to implement and use multiple teaching techniques and strategies in the classroom. To address this need, community colleges may need to offer professional development programs that focus on pedagogical theory and the use of instructional strategies for their faculty and to provide encouragement to instructors who utilize multiple instructional strategies in their classrooms.

Recommendations for Future Research

More research is needed to improve understanding about how instructors at the community college level prepare for the job of educating today's community college students. The survey in this study could be administered to Kansas community college general education instructors to gather a larger sample and to examine any changes in the data over the three years since the study was first conducted. This study could also be replicated with a sample of community college instructors from other states to examine if the results are consistent. Adjunct and part-time instructors in Kansas could be surveyed as well, to study if there is a difference in their pedagogical backgrounds and use of instructional strategies. Qualitative research may gather information about how community college instructors approach their classes and the learning process. More research could be conducted to investigate whether certain instructional strategies are more suited to specific disciplines than are others. While career and technical instructors were not included in this initial study, this research could also be expanded to career and

technical instructors in community colleges to see if the results are comparable to the findings about general education faculty members.

Concluding Remarks

It is vital to understand the pedagogical training of the community college faculty and their use of instructional strategies in order to ensure that students are exposed to a variety of teaching strategies and have the best opportunity to learn. As Kansas community college general education instructors educate almost half of all higher education students in the state, more attention to the training of those instructors is necessary in order to ensure that students have a quality learning experience. This study is one step in understanding the faculty who teach general education courses at the community college level.

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Appendix A: Survey Instrument

Instructional Strategies Survey

1. Where do you teach?

    Allen County Community College

    Barton County Community College

    Butler Community College

    Cloud County Community College

    Coffeyville Community College

    Colby Community College

    Dodge City Community College

    Fort Scott Community College

    Garden City Community College

    Highland Community College

    Hutchinson Community College

    Independence Community College

    Johnson County Community College

    Kansas City Kansas Community College

    Labette Community College

    Neosho County Community College

    Pratt Community College

    Seward County Community College

2. What discipline do you teach in?

    Business

    Computer Science

    English

    Communication

    Science

    Math

    History

    Political Science

    Sociology

    Art

    Music

    Theater

    Economics

    Humanities

    Foreign Language

    Physical Education

3. How long have you taught at your current institution?

    1 year

    2 years

    3-5 years

    6-10 years

    11-15 years

    More than 15 years

4. How long have you taught at the community college level?

    1 year

    2 years

    3-5 years

    6-10 years

    11-15 years

    More than 15 years

5. What courses have you taught throughout your community college teaching career?

6. How many total years have you been teaching?

    1 year

    2 years

    3-5 years

    6-10 years

    11-15 years

    More than 15 years

7. Have you taught at the K-12 level?

    Yes

    No

    If so, what courses?

8. If the answer to the previous question was yes, in what state were you certifiec to teach at the K-12 level?

9. Do you attend any state, regional, or national meetings for professional development?

    In your discipline?

        Yes

        No

    In education?

        Yes

        No

    Have you attended the League for Innovations in the Community College Conference?

        Yes

        No

    Have you attended the National Institute for Staff and Organizational Development Conference?

        Yes

        No

    Please list the sponsoring organization

10. Have you taken any courses in instructional design or pedagogy?

    Yes

    No

    If yes, please describe the course.

11. What types of instructional strategies do you use in the classroom for general education courses?

    Lecture

    Collaborative Learning

    Jigsaw

    Service Learning

    Group Projects

    Group Discussions

    Games

    Role Playing

    Simulations

    Socratic Discussion

    Student Presentations

    Other (please specify)

12. How much time during a semester do you use these instructional strategies in the classroom for general education classes? (Please estimate a percentage of time you spend on each strategy. The total should equal 100—enter numbers only.)

Lecture

Collaborative Learning

Jigsaw

Service Learning

Group Projects

Group Discussions

Games

Role Playing

Simulations

Socratic Discussion

Student Presentations

Other (please specify)

13. Comments about your use of instructional strategies in the classroom.

14. If you are interested in hearing the results of this survey, please include your contact information, including e-mail address.

Appendix B: IRB Request

IRB Request

Date: November 3, 2007_____

IRB Protocol Number_____

(IRB use only)

I. Research Investigator(s) (students must list faculty sponsor first)

Department(s) School of Education_____

Name	Signature	
1. Sara Harris_____	_____	Principal Investigator
2. Dr. Karl Krawitz_____	_____	X___ Check if faculty sponsor
3. _____	_____	____ Check if faculty sponsor
4. _____	_____	____ Check if faculty sponsor

Principal investigator or faculty sponsor contact information:

Phone: 620-433-2517

email: smharris@spgsmail.bakeru.edu

Mailing address of Principal Investigator:

101 S. Steuben

Chanute, KS 66720

Expected Category of Review: __ Exempt __ Expedited __ Full__ Renewal

II: Protocol Title

Instructional Strategies Used by Kansas Community College Instructors

III. Summary:

1. Background and purpose of research:

The purpose of this research is to investigate the pedagogical training of Kansas community college instructors to determine if it plays a role in their use of instructional strategies in the classroom. Data will be collected from general education instructors at Kansas community colleges across the state with the results compiled by SurveyMonkey.

2. What measures or observations will be taken in the study?

The on-line survey has been created at SurveyMonkey.com and consists of twelve questions. The survey and contact e-mail are attached to this proposal. The survey consists of two parts. Part One gathers information about the instructors—where and what courses they teach. Part Two examines instructors' pedagogical training and the use of various instructional strategies in their general education courses. The respondents will also be given the opportunity to submit their contact information to receive the results of the study, if desired. The survey is found at:

http://www.surveymonkey.com/s.aspx?sm=hdny1cp1gV0TDp7gbN6Q1g_3d_3d

3. Will the subjects encounter the risk of psychological, social, physical or legal risk?

No, there are no risks to the subjects.

4. Will any stress to subjects be involved?

No, no stress is involved in the study.

5. Will the subjects be deceived or misled in any way?

No, information is only being gathered from the questions asked.

6. Will there be a request for information which subjects might consider to be personal or sensitive?

No, only factual information about the classes taught, their years of teaching, and the instructional strategies they use is being gathered.

7. Will the subjects be presented with materials which might be considered to be offensive, threatening, or degrading?

No, the questions on the survey only deal with the subject's teaching experiences.

8. Approximately how much time will be demanded of each subject?

The twelve questions on the survey will take anywhere from five to fifteen minutes to complete, depending on the individual comments that are made by the respondents.

9. Who will be the subjects in this study? How will they be solicited or contacted?

The survey will be sent as a link to the email addresses of full-time general education instructors at the nineteen Kansas community colleges.

Contact E-mail:

My name is Sara Harris and I am a doctoral student at Baker University in the Educational Leadership Program. I am conducting a clinical research study as part of my course work and would like your help. I am gathering information about instructional strategies used by Kansas Community College instructors in general education courses. Please take a couple of minutes and complete the short survey found at

http://www.surveymonkey.com/s.aspx?sm=hdny1cp1gV0TDp7gbN6Q1g_3d_3d. Your individual responses will be kept anonymous and will be used to complete the study. If you have any questions, please contact: Sara Harris, smharris@spgsmail.bakeru.edu. Thank you for your assistance.

10. What steps will be taken to insure that each subject's participation is voluntary? What if any inducements will be offered to the subjects for their participation?

The instructor's participation in the study is completely voluntary; if they choose not to participate, they will simply not complete the survey. There will be no inducements offered for participation.

11. How will you insure that the subjects give their consent prior to participating? Will a written consent form be used? If not, explain why not.

The consent of the subjects is based on their voluntary completion and submission of the survey.

12. Will any aspect of the data be made a part of any permanent record that can be identified with the subject?

No, all data is analyzed as a group and no responses will be identified with the individual respondents.

13. Will the fact that a subject did or did not participate in a specific experiment or study be made part of any permanent record available to a supervisor, teacher or employer?

No, there will be no record of a subject's participation kept.

14. What steps will be taken to insure the confidentiality of the data?

No responses will be identified with an individual participant.

15. If there are any risks involved in the study, are there any offsetting benefits that might accrue to either the subjects of society?

No risks are involved.

16. Will any data from files or archival data be used?

No, the only information used for the study will come from the survey results.

Appendix C: IRB Approval

To: M Sara M. Harris [smharris@spgsmail.bakeru.edu]

Dear Ms. Harris --

Your project (M-0048-1107-1122) has been reviewed and approved under the EXEMPT category of review. Until I can get a hardcopy letter to you, you may consider this email as evidence of IRB approval. You should expect the hardcopy letter within a week.

Sincerely,

m

Marc Carter, PhD
Chair, Baker IRB

"There is no power for change greater than a community discovering what it cares about."
--
Margaret Wheatley

Appendix D: Participant E-mail

From: Sara M. Harris [mailto:smharris@spgsmail.bakeru.edu]

Sent: Thursday, November 29, 2007 2:13 PM

To: Dudek, Steve; Lueth, Steven; Howe, Brian; Harrington, Joseph; Hathcock, Kristen; Bretches, Sarah; Goerl, Stephannie; Barrows, Mary; Johnson, Teresa; Moritz, Ruth; Forst, Bill; Wolf, Curtis; Causey, James; Edgar, Jason; Robinson, Kay; Acker, Yvonda; McCaffery, Linda; Simmons, John Dr.; Fryberger, Vern; Erikson, Karole; Gaunt, Glenna; Folkerts, Timothy J; Allen, Randy; Bealer, Rick; Dayton, Steve; Johnson, Edmond

Subject:

My name is Sara Harris and I am a doctoral student at Baker University in the Educational Leadership Program. I am conducting a clinical research study as part of my course work and would like your help. I am gathering information about instructional strategies used by Kansas Community College instructors in general education courses. Please take a couple of minutes and complete the short survey found at http://www.surveymonkey.com/s.aspx?sm=hdny1cp1gV0TDp7gbN6Q1g_3d_3d. Your individual responses will be kept anonymous and will be used to complete the study. If you have any questions, please contact: Sara Harris, smharris@spgsmail.bakeru.edu.

Thank you for your assistance.

Sara Harris