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Benchmarking the Use of Learner-Centered Teaching Practices in Missouri Community Colleges

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by

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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work at Lindenwood University and that I have not submitted it for any other college or university course or degree.

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Abstract

Learner-Centered (LC) teaching focuses on shifting the role of an instructor from a provider of information to a facilitator of learning. Several Missouri community colleges have declared themselves LC institutions through use of the term in their mission statements and/or strategic goals. Although a metric for demonstrating this commitment, in the form of a rubric created by Dr. Blumberg (2009) existed, it was not in common use at the time this study was conducted. Additionally, a void existed on how the traits of LC instructors differed, if at all, from the traits of more traditional instructors. This quantitative, causal-comparative study attempted to address these two issues. The survey instrument used in this study was designed to rate the use of LC teaching methods by faculty using, with permission, Dr. Blumberg's rubrics. The survey also allowed the researcher to look for significant differences between faculty members' use of LC teaching methods and his or her training in pedagogy, teaching experience, and academic discipline. Analysis of results indicated respondents rated themselves at a high level of transitioning toward LC teaching methods. Respondents who reported receiving training in pedagogy from professional development (PD) provided outside their employer and faculty in the field of Oral and Written Communication were associated with significantly more LC teaching methods. Respondents who reported receiving their training in pedagogy from employer-provided PD were associated with significantly less LC teaching methods. Notably, no significant difference in the use of LC teaching methods was found among respondents with differing years of teaching experience. These findings imply changes to PD strategies, curriculum, and hiring policies may be the most effective should an institution wish to increase the use of LC practices by its faculty.

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Chapter One: Introduction

Does a college exist to provide instruction or to produce learning? The answer to this query, first posed by Robert Barr and John Tagg (1995) in their seminal article, *From Teaching to Learning – A New Paradigm for Undergraduate Education*, has many implications for an institution of higher education, most notably for what happens in its classrooms. Several community colleges in Missouri have identified their response to this question with the inclusion of the term Learner-Centered (LC) in their campus mission and vision statements, strategic goals and initiatives, and advertising materials. Additionally, a commitment to producing student learning is a core component of the criteria for accreditation of the Higher Learning Commission (HLC), the accrediting body for Missouri community colleges (HLC, 2012).

The term LC stands in contrast to the term Teacher-Centered (TC), as a way of denoting the fundamental paradigm shift called for in LC teaching. In a traditional TC classroom, the role of the educator is to be a provider of knowledge (Blumberg, 2009). In an LC classroom, the role of the educator is to be a facilitator of learning (Weimer, 2013). Learner-Centered teaching focuses on moving away from an information delivery model of education toward a learning experience model of education (Doyle, 2011).

Learner-Centered teaching is not a one-size-fits-all model and does not prescribe a precise series of actions. Indeed, “Learner-Centered practices do not look the same from school to school, classroom to classroom, day to day, or even moment to moment within the same classroom” (McCombs & Miller, 2009, p. 34). Instead, LC teaching stipulates a specific mindset be used in the decision making process of the educator (Blumberg, 2009). McCombs and Miller (2009) considered educators to be LC when

"they are attentive to learners and their learning needs, and when they understand basic principles of human learning, motivation, development and individual differences, [when] they 'go with the flow' and create innovative environments that are flexible and dynamic" (p. 34).

The LC model of teaching and learning stems from the Learner-Centered Psychological Principles (LCP) developed by a task force formed by the American Psychological Association (APA) in 1997 (Weimer, 2013). The LCP are a list of 14 cognitive and metacognitive factors, motivational and effective factors, developmental and social factors, and individual difference factors which holistically define student learning (Learner-Centered Principles [LCP] Work Group, 1997). The LCP Work Group compiled and distilled findings from over 100 years of research on learning in the fields of psychology, education, sociology, and neurobiology to create the LCP (LCP Work Group, 1997). Since their creation, these principles have been adopted as best-practices for facilitating learning by the APA, the Association of American Colleges and Universities (AACU), the American Educational Research Association (AERA), the National Science Foundation (NSF), the National Research Council (NRC), and the United States (U.S.) Armed Forces (Henson, 2003; McCombs & Miller, 2007).

Although LC teaching is considered a best-practice, evidence of its use in higher education is sparse (Wright, 2011). Research-based studies on the effects of LC teaching have typically been isolated to a small number of instructors in a handful of courses and disciplines (Doyle, 2011; Matlin, 2002). Within the last five years fewer than 50 academic studies have been published on the subject, the majority of which studied only one instructor or one course. This study was designed to address this gap in knowledge

by determining the degree to which LC teaching methods were being used by full-time general education faculty in Missouri community colleges.

Background of the Study

The concept of Learner-Centeredness can be applied to many different areas of an institution. The areas include its buildings (Teitelbaum, 2011), its policies and procedures (Cullen, Harris, & Hill, 2012) and its administration (Harris & Cullen, 2008a; McCombs & Miller, 2009). However, the focus of this study was to examine the application of LC practices by teachers in their classrooms. A brief history of the contrasting evolutions of teaching and learning at the elementary and secondary level (K-12) and at the post-secondary level (higher education) will provide a justification of the need for this study at the higher education level.

The profession of teaching at the K-12 level in the United States has its roots in the common schools of the mid-nineteenth century (Mondale & Patton, 2001). In these one-room school houses, a teacher was not only expected to offer an education encompassing literacy and arithmetic, but to also provide an example of proper morality and character to a group of students who typically ranged greatly in their native languages and abilities (U.S. Department of State Bureau of International Information Programs, 2012). This tradition of a teacher as a subject matter authority, a skilled facilitator of learning, and a support structure for a developing student persists as an ideal in K-12 schools to this day (U.S. Department of State Bureau of International Information Programs, 2012). As such, LC teaching methods are increasingly common in elementary and middle school classrooms (Salinas, Kane-Johnson, & Vasil-Miller, 2008).

The development of teaching as a profession in institutions of higher education in the United States stands in stark contrast to the idyllic K-12 paradigm. The first institutions of post-secondary education in the United States emerged with the founding of Harvard in 1636 (Schuster, 2001). Faculty at these institutions were considered to be content experts in the fields of religion and classical languages (U.S. Department of State Bureau of International Information Programs, 2012). University faculty spoke only Latin and Greek in their classrooms to an audience of primarily privileged white male students who had passed rigorous standardized entrance examinations (Arendale, 2010a). Faculty were not expected, in any way, to assist students outside of the lecture hall (Arendale, 2010a). Activities in these early higher education classrooms were focused entirely on the instructor, so it can be assumed little, if any, LC instruction occurred.

The expectation that higher education faculty should work with students to bridge academic gaps began to appear with the establishment of a separate academic department for learning assistance at the University of Wisconsin in 1849 (Arendale, 2010a). However, this task was consistently assigned to newly hired faculty who were not expected to teach academic content (Arendale, 2010a). Even today, a separation between the faculty responsible for teaching students academic content and faculty responsible for teaching students how to learn persists (Arendale, 2010b). It is not expected that a subject matter expert have any expertise in how to best teach students content knowledge (Matlin, 2002). Indeed, TC approaches characterize higher education today (Blumberg, 2009; Doyle, 2011; Hains & Smith, 2012; Weimer, 2013).

Most experts in the field of LC teaching credit academics Barr and Tagg (1995) as the first to put forward a call for LC teaching in institutions of higher education. In their

watershed article, *From Teaching to Learning-A New Paradigm for Undergraduate Education,* Barr and Tagg (1995) put forth the radical idea that post-secondary faculty members should be evaluated solely in terms of the student learning he or she produces. Barr and Tagg's appeal to institutions of higher education to steer away from the traditional system which values instructor knowledge over student learning gave rise to a decade of research on teaching and learning. The result of that research was a paradigm shift from a TC to a LC approach to teaching (Blumberg, 2009).

The essence of LC teaching is for instructors to provide students with the best learning environments and experiences possible (Barr & Tagg, 1995). Learner-Centered teachers carefully examine and reflect on classroom practices and attempt to focus all decisions made on potential impacts on students (Doyle, 2011). As such, the LC teacher does not spend time deciding what he or she will do in the classroom each day, instead he or she spends time deciding what students will learn and how learning will best be accomplished (Weimer, 2013). The core concepts of LC teaching practices are based on a distinct understanding and description of the processes of learning, teaching, and decision making (Blumberg, 2009).

Conceptual Framework

This study's overarching purpose was to focus on educational best-practices that support students as learners. The theoretical framework which best supports this perspective is a pragmatic constructivist approach. Pragmatism is a philosophical tradition deeply rooted in American culture, which can be best understood as standing in stark contrast to the Platonic, or rationalist, traditions of Europe (Eisendrath, 2012). First proposed by Charles Sanders Pierce in 1878, and later elucidated by William James,

pragmatism proposes that truth is not an absolute, but is instead relational to the experiences of the observer (Eisendrath, 2012).

A pragmatist places value not in the essence of truth, but in what purpose the discovery of truth can serve (James, 1907). When posed with a philosophical dilemma to which there could be several possible solutions, a pragmatist first considers "what difference would it practically make to anyone if this notion rather than that notion were true?" (James, 1907, Lecture II, para.3). If no practical difference exists between the alternate solutions, the pragmatist simply considers the alternatives to be synonymous and deems the argument moot (Eisendrath, 2012). Simply put, a pragmatist is concerned not with what is true, but what works.

In terms of educational best-practices this study was, therefore, concerned with processes which have demonstrated in actual practice to increase student learning. In order for a practice to demonstrate an increase in student learning, it is imperative that a precise definition of student learning be agreed upon. Constructivism is a pragmatic approach to providing a definition of learning (Matthews, 2003). Most associated with the work of developmental psychologist and philosopher, Jean Piaget, constructivist theory posits learning is a mental construct (Sutinen, 2008). That is, learning is a tangible thing which happens solely within the mind of the learner (Brooks, 2006). Constructivists will declare learning has occurred when the learner builds interrelationships among sets of factual information and applies his or her understanding of those interrelationships in novel contexts (Sutinen, 2008).

A constructivist description of learning as a tangible mental structure, or process, has been supported by modern neurobiological analysis. Research findings have

confirmed cognition is correlated to specific changes in the anatomy and physiology of neurons in the brain (Doyle, 2011). Additionally, research with functional magnetic imaging has shown neurons in the hippocampus and other key areas of the brain associated with memory and learning only engage and functionally connect with other neurons when the learner is actively engaged in exploring the surrounding world (Nauert, 2010).

When viewed through a constructivist lens, which defines learning as a practical activity which occurs within the brain of the learner only when he or she is dynamically connected with outside world, the need for an educator to control the surroundings of the learner becomes self-evident (Sutinen, 2008). How, then, does one most realistically evaluate the traditional learning environment of the school? Most modern analyses of schools have used some form of a systems approach (McCombs & Miller, 2007). Systems approaches are relational models which study complex adaptive systems based not only on the individual elements that contribute to the whole, but on the interactions between and among those elements (Burns & Knox, 2011). In their application of a systems approach to classrooms, McCombs and Miller (2007) identified three primary elements, or domains, which influence student learning; the organizational, technical, and personal domains.

From the pragmatic point of view of this study, it was important to focus only on the domain found to have had the greatest demonstrated beneficial impact on student learning. Some research showed variables in the organizational domain, specifically, space utilization, had the most relevance on student learning (Teitelbaum, 2011). Other research indicated components in the technical domain, specifically the curriculum

(Cullen et al., 2012) and the school leadership (Harris & Cullen, 2008a; McCombs & Miller, 2009), resulted in the greatest increases in student learning. However, the bulk of the research indicated influences in the personal domain, namely teacher quality, led to the greatest increases in student learning outcomes (Blumberg, 2009; Farnsworth, 2010; Hattie, 2009; McCombs & Miller, 2007; Wayne & Youngs, 2003). Indeed, in the report, *The Widget Effect: Our National Failure to Acknowledge and Act on Differences in Teacher Effectiveness,* the New Teacher Project affirmed "teaching is the essence of education, and there is almost universal agreement among researchers that teachers have an outsized impact on student performance" (Weisberg, Sexton, Mulhern, & Keeling, 2009, p. 9). This preponderance of evidence steered this study in the direction of investigating teacher traits and practices.

The pragmatic researcher now inquired, which teaching practices had this evidence revealed to have resulted in the greatest enhancement of student learning? Consistently and overwhelmingly, research findings asserted LC teaching was the answer to this question (Blumberg, 2009; Doyle, 2011; Hains & Smith, 2012; McCombs & Miller, 2007; Salinas et al., 2008; Wang, Myers, & Yanes, 2010). Learner-Centered teaching methods are grounded in the LCP developed by a task force formed by the APA in 1997 (Weimer, 2013). The task force compiled the LCP from over 100 years of research on learning in the fields of psychology, education, sociology, and neurobiology (McCombs & Miller, 2009). The LCP use cognitive, metacognitive, motivational, effective, developmental, social, and individual difference factors to comprehensively define student learning (LCP Work Group, 1997).

Scrutinizing the model of LC teaching with a pragmatic lens, the researcher then needed to find a way to operationalize the precepts of LC teaching and decision-making. A method of concretely characterizing a teacher as either LC or TC was found in a rubric created by Blumberg in her 2009 work, *Developing Learner-Centered Teaching: A Practical Guide for Faculty*. This rubric can be used to rank an instructor on a scale from 1 to 4 on his or her use of LC teaching methods (Blumberg, 2009).

A final pragmatic examination of the focus of this study leads the reader to ask; of what practical value is knowledge of the LC score for any given instructor? First, this study proposed use-value in the average LC score of all instructors from each community college as a tool each institution can use as an accountability measure for its internal and external stakeholders, such as its students, community, and accrediting agencies. Second, this study proposed use-value in the average LC score for instructors grouped by amount and type of training in pedagogy, years of teaching experience, and academic discipline, as a tool institutions can use to focus hiring and/or professional development (PD) efforts to increase the use of LC practices by its faculty.

Statement of the Problem

A review of websites of Missouri community colleges, conducted in August, 2013, revealed five of the 12 openly declare themselves as LC institutions. This commitment is made in various ways. A few institutions include the term learner-centered, learning-centered, or student-centered in highly visible institutional documents, such as mission statements and/or strategic goals. The remainder include such terms in less official documentation, such as college descriptions in advertising materials and course catalogs. All 12 Missouri community colleges are accredited by the HLC and are,

therefore, required to demonstrate best-practices in promoting student learning (HLC, 2012; National Center for Educational Statistics [NCES], 2013).

In the current age of accountability in higher education, an institution is increasingly expected, through its research department, to provide numeric data to support any claims it makes and to demonstrate that it meets the standards of its accrediting agency (Basken, 2012; Kanter, 2011; Lederman, 2013a). No longer does it suffice to have anecdotal confirmation of an assertion, documented evidence is now required (21st-Century Commision on the Future of Community Colleges, 2012; Hains & Smith, 2012). However, there is no quantitative measure currently in widespread use to determine the extent to which an institution is LC. Neither are there any data regarding how the demographics of faculty employing LC teaching methods at community colleges differ, if at all, from those of faculty employing TC teaching methods.

Without a measure of the use of LC teaching methods by its faculty, an institution has no way of knowing if it is meeting its established goal of being LC. According to Doyle (2011), if an institution wished to invest time or dollars in increasing the use of LC teaching methods by its faculty, its efforts would be little more than trial and error without evidence on how to best direct those efforts. Previous research has suggested factors, such as training in pedagogy, years of teaching experience, and academic discipline all influence the extent of an instructor's use of LC teaching methods (Lail, 2009; Matlin, 2002; O'Meara, Terosky, & Neumann, 2009). However, no quantitative data exist to support this conclusion for community college faculty.

Purpose of the Study

The purpose of this study was two-fold. First, the study sought to rate the use of LC teaching methods by full-time general education faculty at Missouri community colleges using Blumberg's (2009) rubrics. Second, the study looked for significant differences between a full-time general education faculty member's use of LC teaching methods and several possibly related elements. These factors included the faculty member's amount and type of training in pedagogy, years of teaching experience, and academic discipline.

Research questions and hypotheses. The following research questions guided the study:

1. Based on Blumberg's scale, how do full-time general education faculty at Missouri community colleges rate in regards to the use of LC teaching methods?

2. Based on Blumberg's scale, does a full-time general education faculty member's use of LC teaching methods significantly differ by the faculty member's amount and type of training in pedagogy?

$H2_0$: The mean LC score will be statistically equal across all groups of full-time faculty with differing amounts and types of training in pedagogy.

$H2_a$: At least one mean LC score will not be statistically equal across groups of full-time faculty with differing amounts and types of training in pedagogy.

3. Based on Blumberg's scale, does a full-time general education faculty member's use of LC teaching methods significantly differ by the faculty member's years of teaching experience?

$H3_0$: The mean LC score will be statistically equal across all groups of full-time faculty with differing years of teaching experience

$H3_a$: At least one mean LC score will not be statistically equal across groups of full-time faculty with differing years of teaching experience.

4. Based on Blumberg's scale, does a full-time general education faculty member's use of LC teaching methods significantly differ by the faculty member's academic discipline?

$H4_0$: The mean LC score will be statistically equal across all groups of full-time faculty in differing academic disciplines.

$H4_a$: At least one mean LC score will not be statistically equal across groups of full-time faculty in differing academic disciplines.

Definitions of Key Terms

For the purposes of this study, the following terms were defined:

Academic discipline. In academics, the term discipline refers to a particular subject area or branch of education (Inglis & Aers, 2009). Although the HLC requires a general education faculty member to have "completed a significant program of study in the discipline they will teach" (HLC, 2005, p. 1), neither the HLC nor any governing body in the state of Missouri specifically defines what constitutes an academic discipline. Therefore, for the purposes of this study, the knowledge areas described by the Missouri Department of Higher Education (MDHE) in its statewide general education policy were used as academic disciplines. By this definition the academic disciplines in this study were: *Oral and Written Communication, Humanities and Fine Arts, Mathematics, Life and Physical Sciences, Social and Behavioral Sciences* (MDHE, 2005).

Community college. A community college is a “post-secondary institution that offers programs of at least 2 but less than 4 years duration” (National Governors Association, 2011, p. 25). Other terms used in place of community college in the literature are two-year college, junior college, and city college. A list of community colleges in Missouri was obtained through the Missouri Community College Association (MCCA) website. For the purposes of this study, only community colleges categorized as public, rather than private, independent, or tribal, were considered.

Full-time faculty. Faculty, regardless of any given academic rank, such as professor, instructor, lecturer, or any equivalent term are “persons identified by the institution as such and typically those whose initial assignments are made for the purpose of conducting instruction” (NCES, 2012a, search term "faculty). The term full-time is used to draw a distinction between adjunct or part-time faculty who are hired to fill short term needs and/or teach on a course-by-course basis (NCES, 2012a).

General Education or Gen Ed. This term describes a foundational curriculum intended to “introduce students to the traditional disciplines of the arts and sciences” (MDHE, 2005, section II A). It should be noted that although MDHE mandates each institution have a standardized general education curriculum designed to address the state defined curricular goals and institution-level student competencies, the decision regarding which specific courses should comprise this general education curriculum is left to individual institutions (MDHE, 2005).

Learner-Centered (LC). This term describes any reflective teaching method which focuses on shifting the role of instructors “from givers of information to facilitators of student learning or creators of an environment for learning” (Blumberg,

2009, p. 3). This term stands in contrast to the term Teacher-Centered (TC), which describes more traditional teaching methods in which the instructors' primary focus is on what the instructor is going to do in the course, rather than what the students are going to learn in the course (Blumberg, 2009). Other terms used in place of LC in the literature are Student-Centered and Learning-Centered.

Pedagogy. This term describes the act of teaching and/or the theoretical foundation that supports the actions teachers take (Inglis & Aers, 2009). Pedagogy encompasses both the knowledge and the skill set required for successful instruction (Inglis & Aers, 2009). Neither the HLC, nor the MDHE, require any training in pedagogy for post-secondary faculty, other than those whose academic discipline is in education (HLC, 2005; MDHE, 2005). Therefore, most post-secondary faculty who receive training in pedagogy only do so through PD opportunities (Lail, 2009; Matlin, 2002).

Limitations and Assumptions

The following limitations were identified in this study:

Population and sample demographics. The population in this study was limited to currently-employed full-time general education faculty at community colleges in the geographic area of Missouri. The sample in this study was further limited to members from this population who chose to respond to the survey used for data collection in this study. The data which would have been collected from these non-responders likely differed from the data that were collected from the responders (Fraenkel, Wallen, & Hyun, 2011). This loss of information may have introduced bias into the survey's results (Fink, 2003).

Instrument. The use of a survey for data collection in this study was a limitation. The survey in this study was self-administered, unsupervised, and delivered electronically. All of these factors may have led to the exclusion of data from those who did not respond well to visual stimuli, were not computer-savvy, or were not internally motivated (Borque & Fielder, 2003). Surveys, such as the instrument in this study, which rely on self-reporting can also lead to the collection of unreliable data when a respondent misunderstands a question, has a poor memory, or chooses to intentionally answer dishonestly (Fink, 2003). The length of this survey may have posed a limitation as well. Research has shown increased questionnaire length has a negative impact on data quality (Iarossi, 2008). As the length of the rubric constructed by Blumberg (2009) (see Appendix A) predetermined the greatest part of the length of the survey for this study, this study's survey was not shortened to increase data quality. The length of this survey may have, unfortunately, led respondents to satisfice toward the end of the survey. That is, respondents may have tired of the survey process and just picked answers at random (Barge & Gehlbach, 2011).

Researcher bias. Bias is defined as a lack of objectivity on the part of the researcher (Payne & Payne, 2004). If one does not subscribe to the philosophy of positivism, then the potential for researcher bias exists to some degree in all research conducted by humans (Johnson, 2000). As such, a prospective source for researcher bias in this study was the researcher's personal and academic background, which falls within the positivist perspective. The researcher believed it was possible to "observe and mathematically document phenomenon and use those data to establish reliable, valid

models about how the world works" (Johnson, 2000, para. 2). This perceived ability to be completely objective might have been a potential source of an actual lack of objectivity.

Another source of potential researcher bias was that the researcher falls within the target population of study. At the time of the study, the researcher was a full-time general education faculty member employed at a Missouri community college. To address this bias the researcher did not participate in this study.

The following assumptions were accepted:

1. The demographics of the sample satisfactorily reflected the demographics of the population.
2. Participant responses were offered honestly, without bias, and reasonably represented the data the researcher attempted to collect.
3. The presumptions of the researcher on the relationships being studied did not significantly influence the outcome of the research.

Summary

Learner-Centered teaching is a reflective, research-based approach to teaching in which the instructor assumes the role of a coach or mentor to facilitate student learning (Weimer, 2013). Numerous studies have demonstrated the effectiveness of LC teaching in increasing student learning outcomes (Blumberg, 2009). The principles on which LC teaching are based have been accepted as best-practices by many preeminent organizations (Henson, 2003; McCombs & Miller, 2007) However, there is no evidence LC teaching is systematically used in higher education classrooms. This study was designed to provide a quantitative measure of the use of LC teaching methods in Missouri community colleges.

In Chapter Two, a broad overview of the historical evolution of teaching and learning in institutions of higher education will be provided. The impacts of LC teaching methods with a focus on their use in higher education classrooms will then be reviewed. Finally, the roles community colleges and LC teaching are expected to play in the future are discussed. These sections should provide an understanding which will establish the necessity of this study in order to fill the gap in current knowledge regarding community college teaching practices.

Chapter Two: Review of Literature

Increasingly, external stakeholders are calling for greater accountability in higher education (Hains & Smith, 2012; Lederman, 2009; Leveille, 2006). These entities include accrediting agencies, the U.S. government, and the general public (21st-Century Commision on the Future of Community Colleges, 2012; Arum & Roksa, 2011; Basken, 2012). Along with this demand has come the expectation that institutions of higher education conduct the business of educating students using evidence-based best-practices for teaching and learning (HLC, 2012; Kanter, 2011). Learner-Centered teaching is one such best practice which has been demonstrated by numerous studies to increase student learning (Blumberg, 2009; Doyle, 2011; Weimer, 2013).

The results from this study will provide institutions of higher education, specifically community colleges in Missouri, with a quantitative measure of the extent to which LC teaching methods are being used by faculty in those institutions. This measure could be used as a way for the institution to hold itself accountable to its external stakeholders. The results from this study will also provide Missouri community colleges with data regarding the faculty traits associated with the most and least use of LC teaching methods. These data could be of use in focusing both hiring practices and PD efforts should an institution wish to increase the use of LC teaching methods by its faculty.

Three facets of the topic of teaching and learning in community college classrooms are presented in this chapter. First, a synopsis of the evolution of teaching and learning in higher education in the United States from colonial times to the current day is given. Emphasis in this section will be placed on the emergence and impacts of the

constructivist teaching paradigm, specifically, LC teaching. The purpose of this historical summary is to illustrate the need for this study as a means to potentially merge two contradictory philosophies higher education in the United States has struggled to merge since its inception.

Second, a summary of the findings of recent scholarly research on the impacts of LC teaching in classrooms in institutions of higher education is presented. Both positive and negative and quantitative and qualitative impacts will be considered. Finally, a brief outline of the goals being set for LC teaching and community colleges in the near future will be given. Emphasis in this section will be placed on calls to action by governmental and business entities and the impending shift in the makeup of community college faculty membership.

History of Teaching and Learning in Higher Education in the United States

When observed through the lens of hindsight, the development of higher education in the United States can be understood as revolving around two key questions: who should attend institutions of higher education, and what purpose should higher education serve (Arendale, 2010a)? History demonstrates the varying answers to these two questions have always been closely tied to the zeitgeist of the times and have had a heavy hand in shaping teaching and learning at institutions of higher education (Hutcheson, 2011). During certain periods of history, institutions of higher education in the United States served students as a tool of emancipation and a means to achieve self-actualization (Wilhite & Silver, 2005). Through other eras, higher education served the nation as a tool of indoctrination and as a means to produce a particular kind of citizen

(Wilhite & Silver, 2005). Details of these periods and the transitions between these two extremes are documented in the ensuing sections of this chapter.

Higher education emerges: 1600s-1800s. As noted previously, the first institution of higher education in the United States, Harvard, was established in 1636 (Schuster, 2001). The College of William and Mary and the Collegiate School, present day Yale University, followed in 1763 and 1793, respectively (Owens, 2011). The missions of these early institutions were twofold; to inculcate students in the ways of the church and to preserve traditional English culture and heritage in the new world (Cremin, 1970). Owens (2011) described the purpose of education during these colonial times as "not fundamentally a means by which to produce scholars or contributive citizens; rather as a process of cultural transmission, indoctrinating a future generation with the ideals of the former" (p. 530).

Faculty at these institutions were male and typically had been trained in England (Association of Public and Land-Grant Universities [APLU], 2012). University faculty were considered to be content experts in the fields of religion and classical languages and, thus, spoke only Latin and Greek in the classroom (U.S. Department of State Bureau of International Information Programs, 2012). All students receiving a higher education in colonial times were privileged, white, male students who had passed rigorous standardized entrance examinations (Arendale, 2010a). Daily classroom learning was highly controlled and consisted of strictly regimented routines of recitation, scripture reading, and oral defense of liturgical principles (Morrison, 1935). Teaching methods were entirely, by its current definition, TC (Blumberg, 2009).

For a brief time, roughly between 1740 and 1780, the focus of higher education shifted away from strictly prescribed religious training reserved only for the elite (Owens, 2011). Men of status who were involved in the Enlightenment movement, such as Benjamin Franklin and colonial governor of Massachusetts Jonathan Belcher, called for renovations in the higher education system to allow students to "study in areas of their own choice" (Miller, 1976, p. 185). Franklin and Belcher argued the existing methods of teaching and learning in universities were antiquated and did no more than restrain the newly emerging nation from its potential (Owens, 2011). Franklin, in his S*ilence Dogood* letters, went so far as to mock the traditional institutions of higher education, such as Harvard, by describing them as "temples where only the rich can enter . . . and where those who attempted to ascend to knowledge eventually gave up and contented themselves with . . . idleness and ignorance" (Franklin, 1722, para. 7).

The institutions which typified this new Enlightenment movement were the Academy of Philadelphia, today the University of Philadelphia, the College of New Jersey, Brown University, and Liberty Hall Academy (Owens, 2011). The modern day concept of a liberal arts education began in these unconventional institutions. Teaching and learning here centered on student needs, rather than the needs of the community or church. Independent thinking was emphasized as students were urged to seek their "natural individual knowledge" (Owens, 2011, p. 534). Liberty Hall, in fact, had no set curriculum other than a requirement that graduates be educated in Greek, Hebrew, and Latin (Miller, 1976). Teaching in these few innovative institutions was, by its current definition, LC (Blumberg, 2009).

This counter-traditionalist movement in higher education continued until the turn of the century, but rapidly metamorphosed into an entirely new educational format between 1780 and 1800. Fueled by a reassessment of traditional customs following America gaining its independence from Britain, the early framers of the new government, such as Thomas Jefferson and Benjamin Rush, created a new educational philosophy, which they deemed the republican paradigm (Owens, 2011). Although the new republican educational paradigm mirrored the Enlightenment ideal in its principles of increased access to education and a more broadly based curriculum, it diverged distinctly in its vision of the purpose of higher education. While proponents of Enlightenment model viewed the needs of students as more important than those of the larger community, proponents of the republican ideal asserted every student should "be taught that he does not belong to himself, but that he is public property" (Rush, 1786, para. 5).

The republican ideal viewed higher education as a tool for creating a base of citizens educated with a standard set of principles on which the new democracy could function. These new principles were clarified in a piece of Virginia state legislation penned by Thomas Jefferson, *A Bill for the More General Diffusion of Knowledge,* which established a system of free public schooling for all children, to be followed by a competitive and hierarchical system of secondary and collegiate education for a select few (Jefferson, 1779). Students who successfully made their way through the upper tiers of controlled curriculum would be deemed proper republican citizens (Owens, 2011). The republican government was seen as inseparable from the education which supported it (Webster, 1783). Noah Webster noted, "without a knowledgeable citizenry, there would

be no way to ensure power stayed in the hands of the people" (as cited in Owens, 2011, p. 539).

Both the Enlightenment and republican ideal sought to eschew the traditions of England. Indeed, together the systems would later be credited with giving rise to the thinkers who founded the pragmatist philosophy, which would stand in contrast to traditional European Platonic beliefs (Eisendrath, 2012). From this pragmatist perspective, the seeds sown by the Enlightenment paradigm would give rise to the Constructivist approach to teaching and learning (Sutinen, 2008). Ultimately, however, the republican model would remain the primary foundation of higher education up to the modern day (Owens, 2011).

Constructivism emerges: 1800s-1950s. During this era the uniquely American philosophy of pragmatism burgeoned. The European tradition of an ethereal pursuit of truth for truth's sake was almost entirely abandoned for the practical pursuit of what could be documented to produce results in actuality (Eisendrath, 2012). This focus on the tangible, rather than the ideal, had drastic implications for society as a whole, and resulted in the founding of the Progressivism movement (Finkelman, 2000). Progressives sought to use scientific principles and techniques to "impose rationality and humane order on the complexities and disorganization of modern life" (Finkelman, 2007, p. 92).

The application of progressive, pragmatic thought to education resulted in the discipline of Constructivism (Sutinen, 2008). Constructivist educators espoused tenants of what today would be defined as LC teaching methods (DeVries, 2002). These applied, real-world principles offered an alternative to the traditional teaching methods commonly in use and shifted the focus of education away from indoctrination of the

student and toward personal fulfillment for the student (Matthews, 2003). Learning was now viewed as a tangible, measurable outcome and the manipulation of the learning environment to maximize student learning became commonplace (Sutinen, 2008). The seeds of LC teaching, which had been sown during the brief Enlightenment period, were now nascent. However, these techniques were not emerging in established institutions of higher education, now collectively called the Ivy Leagues (Hirsch, Kett, & Trefil, 2002). Instead, they were maturing in novel institutions of education, at both the post-secondary and K-12 levels.

Constructivism in higher education. As the newly founded nation began to rapidly develop, a "desperate need of technicians with tangible applied skills" (Wilhite & Silver, 2005, p. 46) emerged. Leaders, such as president Andrew Jackson, called on institutions of higher education to fill this need and create a new middle class of citizens (Wilhite & Silver, 2005). This middle class would need to be built from the stock of individuals who were unable to meet the stringent admissions criteria of the existing Ivy Leagues (Arendale, 2010a). Some traditional institutions of higher education, such as New York University in 1830 and the University of Wisconsin in 1849, initially addressed this challenge by creating academic preparatory academies, separate from the regular academic classroom environment (Arendale, 2010a).

The function of these academies was to diagnose any academic deficiencies in incoming non-traditional students through standardized testing and then to remediate those inadequacies through skill and drill type exercises (Arendale, 2010b). However, these academies were soon eliminated at the demand of the university faculty who feared accusations of lowered academic rigor and dreaded the stigma associated with assisting

students outside the classroom (Arendale, 2010b). In order to counteract this trend, the Ivy Leagues made their entrance standards more stringent, resulting in dramatic drops in enrollment (Arendale, 2010a). Once the Ivy Leagues stopped serving the non-traditional student population, the federal government intervened and created two new varieties of higher education institutions. The shared mission of these novel institutions was to provide a practical education to middle class students who would then, in turn, be of increased usefulness to society (Wilhite & Silver, 2005). These new institutions were the Land-Grant college and the community college.

Passage of the *Morrill Act* in 1862 established federal financial support of Land-Grant colleges which would "teach such branches of learning as are related to agriculture and the mechanical arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life" (Morrill Act, 1862, sec. 4). The original legislation, since amended by the second *Morrill Act* in 1890, created one Land-Grant college in every state and territory in the United States, including the District of Columbia (APLU, 2012). Land-Grant colleges were designed to be distinct from their Ivy League counterparts in several important regards. First and foremost, Land-Grant colleges were seen as an economic engine for the nation, thus high enrollment was critical to each institutions' success (Mohr, 2009). For this reason, Land-Grant colleges became the first institutions of higher education to routinely admit women, Native American, and Black students (J. S. Brown, Pendelton-Jullian, & Adler, 2010).

Learning at Land-Grant colleges focused on individualized programs of study with direct relevance to students' daily lives (APLU, 2012). Teaching at these institutions centered on helping students "learn how to learn" (J. S. Brown et al., 2010, p. 9) and

included instruction both in the classroom and in the field (J. S. Brown et al., 2010). Faculty at Land-Grant colleges were expected to share their expertise and scientific research findings not only with enrolled students, but with the general public in the communities surrounding and supporting them (National Institute of Food and Agriculture, 2013). The passage of the *Smith-Lever Act* in 1914 formalized this practice by mandating the "giving of instruction and practical demonstrations of existing or improved practices or technologies in agriculture . . . and subjects relating thereto to persons not attending or resident in said [Land-Grant] colleges" (Smith-Lever Act, 1914, sec. 2).

Unlike Land-Grant colleges, no single piece of legislation was tied to the establishment of the first community colleges in the United States. Instead, the gradual emergence of the community college began in the early 1900s and drew from the common needs of local communities. An example this can be seen in the creation of the nation's first public community college, Joliet Junior College (Vaughan, 2000). Established in 1901, the founders of Joliet Junior College viewed it as an experimental post-graduate high school program which would serve students who desired to remain in the community and pursue a college education (Boggs, 2010). Joliet Junior College was housed in the local high school and was staffed by high school teachers, but its curriculum paralleled the first two years of a four-year university degree (Joliet Junior College, 2012). This novel institution provided students with both higher education academic content and qualities traditionally reserved for K-12 schools, such as small class sizes and close student-faculty relations (American Association of Community Colleges [AACC], 2001).

The vast majority of community colleges in the United States were founded five to six decades after Joliet Junior College, with an average rate of one community college being founded per week during the years between 1950 and 1960 (AACC, 2001). This rapid increase in the growth of community colleges in this era was driven, perhaps most significantly, by the passage of the *Servicemen's Readjustment Act*, better known as the GI Bill, in 1944 (Wilhite & Silver, 2005). This ground-breaking piece of legislation marked the first instance of provision of federal funds for benefits including cash payments of tuition and living expenses for all eligible veterans obtaining a college, high school, or vocational education (Vaughan, 2000). Enrollment in all institutions of higher education grew dramatically as veterans returned home from World War II (Kim & Rury, 2007). In 1947 alone, veterans using GI Bill benefits accounted for 49% of college admissions (U.S. Department of Veterans Affairs, 2013).

Expansion of the community college system was further influenced by the *Higher Education in American Democracy* report in 1947 (Kim & Rury, 2007). Widely known as the Truman Commission Report, it relied heavily on creation of a public community college system as a mechanism to "provide the means for all citizens to be able to pursue education to their fullest capacity" (Wilhite & Silver, 2005, p. 47). The Truman Commission report called for a shift in the purpose of higher education from "merely being an instrument for producing an intellectual elite [to a] means by which every citizen, youth, and adult, is enabled and encouraged" (Boggs, 2010, p. 2). In order to meet this goal, the report created a framework for financial support of the expansion of the community college system through creation of local taxing districts which would fund the community colleges within those districts (Gilbert & Heller, 2010).

Guided by the principles of greater access to higher education on which they were founded, most community colleges were open-enrollment institutions with no entrance standards or requirements (Mellow & Heelan, 2008). Community colleges began to assume the responsibility abandoned by the learning academies of the Ivy Leagues; remediating students ineligible for admission to traditional four year universities (Arendale, 2010a). Most students enrolled in community colleges were first generation college students (Kim & Rury, 2007). The majority of these students' secondary education had not included coursework designed for college preparation (Vaughan, 2000).

Teaching and learning in community college classrooms mirrored teaching and learning in the Land-Grant colleges. Activities were typically hands-on, and involved learning in both the classroom and in laboratories designed to closely resemble vocational settings (AACC, 2001). Generally, faculty at fledgling community colleges were drawn from K-12 schools or from disillusioned faculty at four year institutions (Lail, 2009). Thus, the founding core of community college faculty had either a strong desire to teach, rather than research, or a strong pedagogical background in what today would be deemed LC practices (Lail, 2009). Indeed, many researchers credit the successes of community colleges directly to the unique attributes of community college faculty (Berry, Hammons, & Denny, 2001; Boggs, 2010).

Constructivism in K-12. Constructivism in the K-12 educational system in the United States has its roots in the Progressivism movement of the late 19th and early 20th century (DeVries, 2002). Progressivism was a broadly based reform movement targeted at the middle class, formed in response to the modernization and urbanization of society

(Harriby, 1999). In terms of education, Progressive thinkers considered an early education as compulsory experience for all children, regardless of the economic or social status of the child's parents (Harriby, 1999). Proponents of progressivism sought to expand and improve public education through scientific educational research as a means to address the "alarming disparities in wealth and condition" (Finkelman, 2000. p. 91) of the newly emerging middle class. Led by John Dewey, Progressive educators opposed the growing national trend, typified by the divergent missions of the Land-Grant Colleges and the Ivy Leagues, which called for a distinct separation between an academic education for the elite few and a narrow vocational training for the remaining masses (John Dewey Project, 2003).

Before Dewey's influences, teaching and learning in K-12 schools closely mirrored teaching and learning in the Ivy Leagues, "with an emphasis on moral training, standardization, and classroom drill" (Mondale & Patton, 2001, p. 35). By its current definition, these early classrooms could be viewed as almost entirely TC (Blumberg, 2009). Dewey regarded such drill-and-recitation methods with disdain, describing schools which used them as "unnatural institutions, contrary to human nature" (Benson, Harkavy, & Puckett, 2007, p. 27). Dewey's choice of the term, unnatural, epitomizes the constructivist assumptions about teaching and learning which were:

> Humans have a natural proclivity for learning which is the result of the Darwinian process of natural selection; there is a specific danger of interfering with these natural tendencies, the result being that learning experiences should emulate those believed to occur naturally. (Matthews, 2003, p. 53)

Constructivist educational theories broke new ground and significantly altered both the physical environment of classrooms and the activities taking place within them (Mondale & Patton, 2001). Providing an organized environment and context for a child to use his or her own natural problem solving abilities was now at the core of teaching and learning (Matthews, 2003). Nowhere, perhaps, was this more evident than in the approximately 100 Montessori schools which flourished between 1911 and the start of World War II (American Montessori Society, 2013). American Montessori schools were a transplantation of the Children's Houses founded by Maria Montessori in Italy at the turn of the century (Whitescarver, 2010). The Montessori Method of teaching evolved from both Montessori's diverse background in medicine, psychology, pedagogy, and anthropology and her Progressive drive to scientifically evaluate and treat social ills (Rappaport, 2001). Montessori first applied her teaching methods, with great success, in the education of children deemed deficient and insane by the Italian government (Seldin, 2010). Dubbed "Montessori's miracle children" (Whitescarver, 2010, p. 18), these 8-year-olds, previously viewed as uneducable, were able to pass state proficiency tests after spending a short time under Montessori's tutelage (Rappaport, 2001).

Classrooms in Montessori's schools, called prepared environments, were engineered to be radically different than classrooms in traditional schools (Whitescarver & Cossentino, 2008). Montessori's prepared environments were the first to extensively utilize child-sized versions of everyday items, such as tables and chairs and were built with windows, sinks, and cabinets closer to the floor to make it feasible for the children using them to be self-sufficient (Seldin, 2010). This reflected the learning focus of the Montessori Method, which centered "on allowing children to engage in work voluntarily,

at their own pace, and emphasized hands-on activities" (Rappaport, 2001, p. 452). The actions of teachers employing the Montessori Method were also profoundly different than those of teachers in traditional classrooms (Whitescarver & Cossentino, 2008). In her book, *The Absorbent Mind*, Montessori defined her vision of the role of the teacher by stating, "The teacher's task is not to talk, but to prepare and arrange a series of motives for cultural activity in a special environment made for the child" (Montessori, 1949, p. 22). She further elucidated this role by describing the routine of a teacher in the prepared environment in this way; "The teacher moves quietly about, goes to any child who calls her, supervising operations in such a way that anyone who needs her finds her at his elbow, and whoever does not need her is not reminded of her existence" (Montesori, 1912, pp. 347-348). Teaching in the Montessori Method was, by its current definition, the embodiment of LC teaching (Blumberg, 2009).

While Montessori principally influenced teaching and learning in primary classrooms, John Dewey had arguably the greatest effect in secondary classrooms of any educator in history (Henson, 2003; Matthews, 2003). Dewey's far-reaching influence grew out of the unique school he founded in 1896 at the University of Chicago (Mondale & Patton, 2001). Originally called the University Elementary School, by 1900 this institution was given the more familiar title of the Laboratory School (Harms & DePencier, 1996). Due to its close association with the University of Chicago, the documented success stories from this original Laboratory School quickly spread through academic circles and triggered a proliferation of laboratory schools throughout the United States (DePencier, 1996). By the 1950s there were approximately 200 laboratory schools

(King & Van Til, 1987), with one or more laboratory schools in each state (Henson, 2003). These laboratory schools served students aged four to 13 (DePencier, 1996).

Dewey, in a set of beliefs he developed to guide his successors, described what teaching and learning should look like in a laboratory school:

> Students begin learning by experimentation and develop interests in traditional subjects to help them gather information. Students are part of a social group in which everyone learns to help each other. Students should be challenged to use their creativity to arrive at individual solutions to problems. The student, not the lesson, is the center of the teacher's attention; each student has individual strengths which should be cultivated and grown. (Harms & DePencier, 1996, p. 4)

Dewey described the curriculum which emerged from these principles as two-dimensional, accentuating the distinctions of the dual responsibilities of the educator to set up constructive activities for the students and to logically organize bodies of subject matter to facilitate a progressively more complex understanding by the students (Tanner, 1991). Educators in laboratory schools needed both expertise in academic content and in the principles of developmental psychology and learning theory in order to set up activities which would allow students to naturally discover the content knowledge the educator intended them to find (Harms & DePencier, 1996). Modern day Dewey advocate, Noam Chomsky, explained this approach to teaching by using a phrase attributed to Wilhelm von Humboldt; "teaching is laying out a string along which the student can progress in his own way through discovery and exploration" (Chomsky, 2012, 24:39).

As little training had been needed to conduct the mechanical and repetitive exercises common to most K-12 classrooms prior to this time, the profession of teaching at the secondary level was “held in generally low esteem” (Harms & DePencier, 1996, p. 3) and few institutions dedicated to teacher training existed. However, because teaching at a laboratory school required more skill than just information delivery, Dewey, by necessity, became a pioneer in the field of teacher training as well. Laboratory schools became training facilities for educators who were interested in improving their classroom performance through the scientific study of pedagogy (Harms & DePencier, 1996). Thus, it can be said the laboratory schools provided, by its current definition, an LC experience for both students and educators alike (Blumberg, 2009).

At this point in United States history, obtaining a primary or elementary level education was “becoming accepted as a right rather than a privilege” (Wilhite & Silver, 2005, p. 47). By 1918, all states required children to attend elementary school (Wise, 2008). However, enrollment in public secondary schools, although mandated by law in many individual states, was not growing at the same pace (High School Leadership Summit, 2003). Prior to the 1870s, the few high schools in existence were private institutions focused solely on preparation for the entrance requirements to the Ivy Leagues, and thus a high school education was viewed as a luxury necessary only for upper-income families. But, after an 1874 Michigan State Supreme Court ruling allowed for the levying of taxes to support public high schools, the number of public high schools increased substantially, and by 1912 all states had established public high schools (Tyler, 1981). The advent of child labor and truancy laws over the next decades substantially augmented enrollment numbers in public high schools (High School Leadership Summit,

2003). By 1940, 73% of American youths of eligible age were enrolled in high school (Goldin, 2008).

Teaching and learning at public high schools was primarily shaped by *The Cardinal Principles of Secondary Education* (High School Leadership Summit, 2003). More often referred to as the Cardinal Principles, these directives were written in 1918 by the Commission on the Reorganization of Secondary Education, a group appointed by the National Education Association (Graves, 2010). The Cardinal Principles declared the primary focus of high schools should be "health, citizenship, and worthy home-membership and, only secondarily, command of fundamental processes" (Kliebard, 1986. p. 50). Although these concepts could have been interpreted and implemented to align with the student-centered principles of Dewey and the Progressives, the concepts, in practice, were construed and administered in a very different manner (Graves, 2010).

Public high schools, which had briefly served as institutions of vocational training, much like the Land-Grant colleges, came to be regarded as institutions of naturalization to the American way of life as the number of enrolled immigrant students increased (Boyer, 1983). In the new public high schools "neither an academic nor a vocational curriculum was considered appropriate because these students were viewed as fit neither for the professions or the trades" (High School Leadership Summit, 2003, p. 3). The term coined to describe the curriculum that accompanied the new focus at these schools was general studies (Boyer, 1983). As the general studies curriculum was focused neither on job-readiness nor academic-readiness, it came to be associated with a culture of loose academic standards (Wise, 2008). The high school experience became increasingly focused on establishing social traditions, such as "Friday night football and senior prom"

(High School Leadership Summit, 2003, p. 3). The emphasis was on producing a fairly standardized product without requiring too much work on either the part of the student or the educator (Boyer, 1983).

Despite the emergence of non-LC principles in high schools, at the end of this era, the public perception of the purpose of education had firmly shifted to what would now be considered to be an LC perspective (Blumberg, 2009). Indeed, a report by the President's Committee on Education Beyond the High School, in July of 1957, stated education's cardinal function was:

> to develop human beings of high character, of courageous heart and independent mind, who can transmit and enrich our society's intellectual, cultural and spiritual heritage, who can advance mankind's eternal quest for truth and beauty and who leave the world a better place than they found it. (pp. 16-17)

But, the launch of the satellite Sputnik by the Soviet Union on October 4, 1957 drastically changed the trajectory of teaching and learning in all institutions of education in the United States (High School Leadership Summit, 2003; Hutcheson, 2011). Sputnik aroused public fear that the United States had fallen behind the rest of the world, and in a panicked response, the majority of the blame was laid squarely on the field of education (Tyler, 1981). Consequently, the next decades saw an unprecedented public and legislative focus on strengthening academic rigor and ensuring the nation's dominant role in an increasingly global society and economy (Hutcheson, 2011).

Counter-Constructivist movement: 1960s-current day. Teaching and learning in current day K-12 and higher education institutions still bear the markings of the era immediately following the launch of Sputnik (Flattau et al., 2007). During this era the

constructivist-led shift toward the use of, what today would be called LC principles, was abruptly abandoned in favor of traditional TC approaches (Freire, 1970). Many experts point to the passage of the National Defense of Education Act (NDEA) in 1958 as the first hallmark of this change (Bankston III, 2011; Wilhite & Silver, 2005). Drafted in a panicked response to Sputnik, the NDEA authorized the spending of an unprecedented amount of federal dollars to support the teaching of science and mathematics as a means to fight the threat of Communism (Bankston III, 2011). Although a portion of the NDEA dollars were spent on teacher training, this training was solely content-related and provided instructors with no knowledge of pedagogy or learning theory (Arendale, 2010a). The majority of the NDEA funds, over a billion dollars, were spent on what were called course content improvement projects (Tyler, 1981). Most of these projects centered on providing training in scientific and technical fields for students deemed academically capable, with the end goal of creating an elite generation of scientists who could fight the totalitarian threat posed by the Soviets (Jolly, 2009). Students deemed to not be academically capable, according to an increasingly narrow and standardized definition of the term, were now tracked away from academic paths (Arendale, 2010a; High School Leadership Summit, 2003).

General acceptance of the notion students could be identified as academically capable through scores on standardized tests, and that only these few students could benefit from an elite education, paved the way for a transition toward what several educational historians have called the ivory tower ideal in institutions of higher education (Jolly, 2009; O'Meara et al., 2009; Wilhite & Silver, 2005). The ivory tower ideal describes an educational setting in which "discipline-specific knowledge was to be

pursued for its own sake, independent of social and political implications and civic obligations" (Wilhite & Silver, 2005, p. 47). Unlike their progressive predecessors, advocates of the ivory tower ideal held the view "that not everyone should have a bachelor's degree" (Hutcheson, 2011, p. 57). Profoundly divergent from the model on which the Land-Grant colleges had been founded, this model of education, also deemed the German model, began to redefine the purposes of teaching and learning at all institutions of higher education (Hutcheson, 2011). The German model of education espoused a positivist perspective and championed a "disinterested pursuit of truth" (O'Boyle, 1983, p. 1). This philosophy of education altered the role of the teacher, primarily, to that of a researcher, with the act of teaching now relegated to secondary importance (Wilhite & Silver, 2005).

As the job duties and responsibilities of educators shifted, so did students' view of the benefits a post-secondary education could provide. A student in the 1960s typically identified his or her goal in higher education as being to learn more about life, whereas a student in the 1970s typically identified his or her goal as being to get a better job (Stadtman, 1980). This paralleled the emerging view of society in which education came to be defined as the means to ensure the dominant role of the United States in a global economy, rather than an instrument to provide democracy and equality for its citizens (Hutcheson, 2011). Teaching and learning in institutions of higher learning had begun to shift back to traditional TC methods (Wilhite & Silver, 2005).

Hutcheson (2011) designated the publication of *A Nation at Risk*, in 1983, as a second key turning point in the counter-constructivist movement in education. The authors of this report, the National Commission on Excellence in Education, were

appointed by Secretary of Education Terrell Bell, to address "widespread public perception that something is seriously remiss in our education system" (National Commission on Excellence in Education, 1983, p. 7). The report asserted that, despite the infusion of substantial funding through legislation, such as the NDEA, the United States was still losing its preeminence in the international economy (National Commission on Excellence in Education, 1983). This had a devastating impact on public perception of the educational system (Hutcheson, 2011). The findings of the *A Nation at Risk* report were widely publicized and ushered in an era of critical public appraisals of higher education (O'Meara et al., 2009).

Scathing critiques of both faculty and students were common. In his 1988 book, *Profscam: Professors and the Demise of Higher Education*, author Charles Sykes described higher education faculty as "overpaid, grotesquely underworked . . . unapproachable, uncommunicative, unavailable . . . and [as having] distorted university curriculum to accommodate their own narrow and selfish interests rather than the interests of their students" (p. 5). The *A Nation at Risk* report described students as "scientifically and technologically illiterate" (National Commission on Excellence in Education, 1983, p. 9). It went on to predict "that for the first time in the history of our country, the educational skills of one generation will not surpass, will not equal, will not even approach, those of their parents" (National Commission on Excellence in Education, 1983, p. 9).

Lack of public trust in the ability of educational institutions to produce expected results led to urgent calls from numerous parties, such the public, the popular press, state and federal legislators, and accrediting bodies, for educational institutions to employ only

well-defined research based best-practices in teaching and to provide all external stakeholders with data from measurable outcomes to document student learning (Hains & Smith, 2012; Lederman, 2013a). Many authorities point to a single piece of legislation, the *No Child Left Behind Act* (NCLB), as characterizing this era in education, typically called the era of accountability (High School Leadership Summit, 2003). First passed in 2001, this legislation was the first to directly link federal funding of K-12 institutions to student performance measures on high-stakes standardized tests (Dee & Jacob, 2010). Although there is no legislation analogous in scope to NCLB for post-secondary institutions, by 1994 more than 16 states had some form of a performance indicator tied to state funding of higher education (Leveille, 2006). In the 1990s, accrediting agencies, such as the HLC, began requiring evidence of the systematic collection and use of student outcome data as a criteria for an institutions continued accreditation (HLC, 2012). The HLC encapsulated this process with the use of the umbrella term, assessment, and began offering an Assessment Academy "designed to build institution-wide commitment to assessment of student learning" (HLC, n.d., para. 1).

The transition to the type of educational system which could produce the required assessment measures on an institution-wide scale forced institutions of higher education to adopt a business-based model of operations in which the focus was primarily on "the bottom line" (Leveille, 2006, p. 6). The result was an industrial-age approach to education, in which students were viewed as workers and their achievements as products (McCombs & Miller, 2009). In this environment, educational activities with outcomes which could be easily assessed were favored, and funded, over those with outcomes that were less tangible (Lederman, 2013a). In terms of teaching and learning, this led to a

"narrowing of the curriculum to exclude lifelong learning skills, and an emphasis on testing and quantifying student achievement in basic skills such as reading and math, and practicing a one-size-fits-all curricula" (McCombs & Miller, 2009, p. 2). It is perhaps no surprise, then, faculty began to overwhelmingly identify themselves as content experts and lecturers, rather than professional educators (O'Meara et al., 2009; Wise, 2008).

Unfortunately, this focus on positivism and accountability did not result in the gains in educational outcomes which had been hoped for. In 2006, a commission appointed by Secretary of Education Margaret Spellings published its findings in a report titled, *A Test of Leadership: Charting the Future of U.S. Higher Education* (The Secretary of Education's Commission on the Future of Higher Education, 2006). This report, widely known as the Spellings Report, noted there were still "unacceptable numbers of college graduates enter[ing] the workforce without the skills employers say they need" (p. vii). The Spellings Report also publicized findings from the Organization for Economic Cooperation and Development (OECD) which noted the United States had fallen to the rank of 12th among major industrialized countries in higher education attainment (The Secretary of Education's Commission on the Future of Higher Education, 2006).

These findings were reaffirmed with the 2011 publication, *Academically Adrift: Limited Learning on College Campuses* (Arum & Roksa, 2011). The authors of this report noted 45% of undergraduates demonstrated no significant improvement in skills, such as critical thinking, complex reasoning, and writing in their first two years of college (Arum & Roksa, 2011). This report also made note of updated OECD data which now placed the United States in the rank of 14th in higher education attainment (Arum &

Roksa, 2011). Although the validity of the conclusions of *Academically Adrift* were soon challenged due to their heavy reliance on a single measure of student learning, the impact of the findings on the public perception of higher education remained intact (Lederman, 2013b).

The findings of reports such as *A Nation at Risk* and *Academically Adrift* led a few in higher education to call for a return to constructivist-based LC educational practices (Barr & Tagg, 1995; Blumberg, 2009; Doyle, 2011; Weimer, 2013). In their 1995 article, *From Teaching to Learning – A New Paradigm for Undergraduate Education*, Robert Barr and John Tagg were the first to propose a post-secondary faculty should be evaluated solely in terms of the student learning he or she produces. Barr and Tagg (1995) challenged both fellow academics and the general public to alter their perception of college as "an institution that exists to provide instruction" (p. 1), and to instead view colleges as "an institution that exists to produce learning" (p. 1). Their appeal to institutions of higher education to steer away from a traditional system which values instructor knowledge over student learning gave rise to a body of research which resulted in a framework for teaching called LC teaching (Blumberg, 2009; Weimer, 2013).

However, these few calls for a shift to a LC paradigm have gone largely unheralded. Teaching and learning in institutions of higher education today can be characterized as almost entirely TC (Blumberg, 2009; Doyle, 2011; Hains & Smith, 2012; Weimer, 2013). The majority of faculty in institutions of higher education still have little training in pedagogy and learning theory (Lail, 2009). Most faculty describe

their teaching style as simply an imitation of the teaching style they were exposed to in their higher education coursework (Doyle, 2011).

Classroom Impacts of Learner-Centered Teaching

The predominance of TC teaching practices accounts for the limited number of studies conducted within the last five years documenting the use of LC teaching practices in classrooms in institutions of higher education. This section of the literature review will summarize the findings of these few research reports. First, this section will present study findings which have documented gains in quantifiable student outcomes. Next, qualitative findings of the positive impacts of LC teaching on student and instructor perceptions will be examined. This section will then conclude with evidences of potentially negative impacts of LC teaching.

It should be noted, only studies specifically self-identified by their authors as LC were reviewed. This is consistent with the precepts of LC teaching as expressed by Blumberg (2009), who described LC teaching not as a specific series of prescribed actions, but instead as a specific mindset used in the decision making process of the educator. Doyle (2011) concurred, asserting LC teaching requires an intentionality of action, rather than a mimicking of actions performed by others. This approach is also consistent with the conclusions reached by Pollock and Finkelstein (2008) and Andrews, Leonard, Colgrove, and Kalinowski (2011), all of whom have observed the majority of research studies which have found positive outcomes from LC teaching strategies have been conducted by faculty with expertise in the field of educational research.

Andrews et al. (2011) found these unique faculty “have a rich and nuanced understanding of teaching and learning” (p. 1), a trait not common to most traditional

faculty. This suggests "[LC teaching strategies such as] active learning as designed and implemented by typical college . . . instructors may superficially resemble active learning used by education researchers, but lacks the constructivist elements necessary for improving learning" (Andrews et al., 2011, p. 1). Indeed, Pollock and Finkelstein (2008) found "faculty involved in, or informed by physics education research consistently post higher student learning gains than less-informed faculty" (p. 1). This was echoed in results of the study conducted by Andrews et al. (2011), which found an instructors' use of strategies consistent with LC teaching was not associated with learning gains if the instructor had no training in educational research.

Positive impacts on quantifiable student outcomes. In a 2008 study conducted by Walker, Cotner, Baepler, and Decker, a large biology course was divided into two sub-sections; one subsection which relied heavily on group-work as an LC strategy and one subsection which utilized only traditional TC lecture presentations. Walker et al. (2008) found significantly different gains in measurable student outcomes between the two sub-sections. These included a 3.2% increase in total percentage of points earned and a higher attendance rate in the LC sub-section as compared to the TC sub-section (Walker et al., 2008). The LC sub-section was also found to have a lower failure rate, with only one student earning less than 40% for the course; as compared to 11 students earning less than 40% for the course in the TC sub-section (Walker et al., 2008).

Similar outcomes have been found on scores of homework assignments in classes utilizing LC teaching methods. In their 2010 study, Kahl and Venette compared student performance on a standardized speech outline assignment across three different universities. Instructors at one of the universities had received extensive training in a

particular learning theory and self-identified as using LC teaching methods, whereas instructors at the other two universities self-reported teaching in a traditional TC style. Kahl and Venette (2010) found the average score for students taught by instructors using LC teaching methods ranged from a C+ to a B-, whereas the average score for students taught by instructors using traditional teaching methods was an F. Comparable increases in homework or assignment scores after use of LC teaching methods were observed in a volleyball course in a study by Vande Broek, Boen, Claessens, Feys, and Ceux (2011) and in a history of textiles course in a study by Kozar and Marcketti (2008).

Yadav, Subedi, Lundberg, and Bunting (2011) measured the effects of the incorporation of an LC strategy called Problem-based Learning (PBL) into an electrical engineering course. Students in different sections of the same course were taught a course concept using differing methods of delivery, either PBL or a traditional TC lecture. The method of content delivery was then switched between sections for the next course concept taught. This within-subjects A-B-A-B design was repeated over four topics. Yadav et al. (2011) found students' learning gains were two-fold higher for concepts taught using the PBL as measured by a pre-test/post-test method.

Learner-Centered teaching methods have also been documented to increase students' final exam grades by several researchers (Gauci, Dantas, Williams, & Kemm, 2009; Pucha & Utschig, 2012). Armbruster, Patel, Johnson, and Weiss (2009) determined there was an increase in the average final exam score from an 85% to a 91% after a re-design of an undergraduate biology course which included LC strategies, such as a focus on a thematic presentation of course content and use of PBL during lecture. An analysis of scores on individual questions from the final exam revealed passing scores

on questions, rating at the highest level of Bloom's taxonomy, increased from 15-18% in previous semesters to 25% after the redesign (Armbruster et al., 2009). Notably, these types of results have been documented even when inclusion of LC strategies results in less direct coverage of course content during class time (Luckie et al., 2012).

All of the studies discussed to this point have chronicled only short-term learning gains as measured by instruments administered within the course in which LC teaching methods were used. However, analogous gains in long-term learning associated with the use of LC teaching methods have also been documented. Avard (2009) confirmed students taught using LC methods in at least one undergraduate course outscored both their institutional and state peers on a state-wide standardized cumulative test given to pre-service teachers. Similar results were documented by Derting and Ebert-May (2010) and Luckie et al. (2012).

Luckie et al. (2012) looked for correlations between exposure to LC teaching methods in undergraduate coursework and scores on the Medical College Admission Test (MCAT). Results from the Luckie et al. (2012) study showed students with LC coursework in an undergraduate biology course had an average MCAT score of 64.73% as compared to an average MCAT score of 53.48% for their non-LC peers. Derting and Ebert-May (2010) were careful to note the persistence of similar long-term gains as measured by a Biology Field Test given to seniors, even when no short-term learning gains were documented within the course in which LC teaching methods were used. This observation led Derting and Ebert-May (2010) to conclude the inclusion inquiry-based LC teaching strategies in undergraduate biology courses allowed students to "learn to learn science . . . which, in turn, influenced their learning in subsequent courses" (p. 1).

Perhaps the most striking evidence of long-term learning gains associated with LC teaching methods came from a 2008 study by Salinas et al. In this study students in several different sections of an introductory psychology course were asked to volunteer to take the final exam for the course a second time, one semester after completing the course (Salinas et al., 2008). Although a decline in scores was observed across all sections of the course, the degree of decline was significantly different for some sections (Salinas et al., 2008). A comparison of the sections with the least decline against the use of LC methods by the instructors of these sections, which had been previously determined by the researchers using two standardized instruments, revealed a strong correlation (Salinas et al., 2008). Although students taught by LC instructors initially had an average lower score on the final exam, students taught by LC instructors showed only an 8% decline as compared to a 30% decline in their peers upon taking the exam a semester later (Salinas et al., 2008).

All of the studies discussed to this point have demonstrated the benefits of LC teaching on student outcomes, but have done so by considering the student population in each study as a whole. Three recent studies elucidate the marked benefits of LC teaching for a specific subset of students; at-risk or low performing students. Gauci et al. (2009) studied an undergraduate physiology class in which students were allowed to voluntarily use a clicker system during lecture. Analysis of data gathered from final exam scores showed among students entering the course with low grades in pre-requisite classes, those who voluntarily participated in the clicker system earned significantly higher scores on the final exam as compared to their peers who did not voluntarily participate in the clicker system (Gauci et al., 2009).

As discussed previously, comparative data collected by Walker et al. (2008) revealed fewer low grades in a sub-section of an undergraduate biology course redesigned to be more LC. A comparison of the grade distribution for the two sub-sections revealed the TC sub-section to have a "wider range of grades, stronger negative skewing, and a larger SD [standard deviation]" (Walker et al., 2008, p. 3). Based on the assumption that grade distribution between the two sub-sections should be expected to not be significantly different, this supports the conclusion that students at the lower end of the grade distribution benefitted the most from the inclusion of the LC strategy (Walker et al., 2008). Perhaps the most striking results came from a 2012 study by Boretz which showed a marked benefit to at-risk students from interventions employing LC methods. Placement in an LC-based success workshop as an intervention due to low GPA and poor attendance at mid-semester was shown to decrease the academic success gap between privileged and non-privileged students from 32% to 18% by the end of the semester (Boretz, 2012). Of the students attending and completing the workshop, 75% remained eligible to enroll in college-level courses for the upcoming semester (Boretz, 2012).

Positive student and instructor perceptions. Analysis of data collected from studies on perceptions of LC teaching revealed both students and instructors have a consistently positive perception of the use of LC teaching (Ahn & Class, 2011; Annerstedt, Garza, Huang-Devoss, Lindh, & Rydmark, 2010; Boretz, 2012; Durso, 2011; Lewis, Shaw, & Freeman, 2010; Luckie et al., 2012; Salter, Pang, & Sharma, 2009; Tyma, 2009; C. Walker, 2009; Wohlfarth et al., 2008). A review of studies conducted in this area showed responses to qualitative assessments regarding the impact of LC

teaching methods tended to fall into four categories. These were general enjoyment of the process, feelings about the amount or type learning which occurred because of the process, overall effectiveness or satisfaction with the course, and feelings of increased motivation and enthusiasm for teaching or learning (Armbruster et al., 2009; Avard, 2009; Gauci et al., 2009; Hains & Smith, 2012; Kennedy, 2009; Marcketti, 2011; Pucha & Utschig, 2012; Schiller, 2009; Shibley, Dunbar, Mysliwiec, & Dunbar, 2008; Tamim et al., 2008; Wang et al., 2010). Each of these will be considered in turn in the following paragraphs.

Results from numerous studies indicated students tend to simply enjoy courses employing LC strategies (Ahn & Class, 2011; Schiller, 2009). A 2010 study by Annerstedt, Garza, Huang-DeVoss, Lindh, and Rydmark examined the effect of implementing PBL in an upper division biomechanics course. Annerstedt et al. (2010) noted 78% of students surveyed at the end of the course "liked the design of the course and were enthusiastic about the student-centered approach [which was used]" (p. 117). Students in a 2008 study by Shibley, Dunbar, Mysliwiec, and Dunbar stated the incorporation of popular literature as an alternative to traditional textbooks in upper division biology coursework made "learning about [the subject] more fun and interesting" (p. 58).

A 2008 study conducted by Wohlfarth et al. was designed to determine what specific aspects of a course students found more pleasurable when the course was taught using LC methods. Wohlfarth et al. (2008) gathered detailed student perceptions of LC teaching in graduate level psychology courses. Open-ended comments taken directly from students in this study showed students "really like the power shift" (Wohlfarth et al.,

2008, p. 4) that occurred when the instructor relinquished appropriate key course decisions to students. One student commented she felt it was the "first time I was treated like a competent and intelligent person who could be trusted with her own learning experience" (Wohlfarth et al., 2008, p. 4). Enjoyment of the feeling of empowerment was also expressed by students in the Hains and Smith (2012) study of the use of LC strategies in an undergraduate agriculture education class. One student declared she liked the LC method employed in the class because it allowed her and her classmates "to get our hands dirty" (Hains & Smith, 2012, p. 363). Another student in this study expressed this feeling by stating the LC teaching method "allowed us to take responsibility for our own learning and realize that if we weren't happy with something it was as much our responsibility as it was any of our professors" (Hains & Smith, 2012, p. 369).

Students tended to characterize their learning in courses taught using LC as deeper and more pragmatic and believed they would better remember what they had learned (Boretz, 2012; Hains & Smith, 2012; Marcketti, 2011). In the Annerstedt et al. (2010) study, 81% of students indicated they felt they had learned more, were able to connect the learning to life skills they would not get in a course with a different format, and believed they would remember what they had learned. Comparable opinions were documented in the Ahn and Class (2011) study, in which one student stated she "came through this [LC] exercise amazingly equipped to take the midterm exam, understanding the course material much more deeply and with a different perspective than previously" (p. 274). Interestingly, a consistent phrasing was used in two separate studies when students were asked to reflect on the learning gained in courses which contained LC elements. Students in two separate and unrelated studies stated the LC strategy employed

had “made [them] think outside the box” (Lewis, Shaw, & Freeman, 2010, p. 53; Pucha & Utschig, 2012, p. 29). Lewis et al. (2010) studied the effects of the use of an LC strategy called a creative exercise in undergraduate chemistry courses. Pucha and Utschig (2012) studied the effects of using PBL and peer-assisted learning in freshmen engineering courses.

In addition to fostering a positive students perception of their own learning, results of several studies revealed inclusion of LC methods increased students’ satisfaction with a course, students’ perceptions of teacher effectiveness, and students’ perceptions on the effectiveness of the course (Armbruster et al., 2009; Luckie et al., 2012; Salter et al., 2009; Wang et al., 2010; Wohlfarth et al., 2008). In his 2009 study, Kennedy observed the effect of introducing in-class debates as a LC teaching strategy. As measured by student surveys, Kennedy (2009) marked a 10% increase in student satisfaction with teaching methods in the course after students participated in debates. This increase was despite an initially low favorability rating of debates as an in-class activity at the beginning of the semester (Kennedy, 2009).

Walker’s 2009 study documented student perceptions of the use of long structured case studies as an LC strategy in a policy study course. Results from an end of the semester survey revealed 100% of the students rated the method as either generally or extremely effective at getting value out of the learning experience, and 98.4% rated the method as either generally or extremely effective at developing and understanding of key concepts of the course (Walker, 2009). Similarly, 96% of students in the Luckie et al. (2012) study gave positive reviews regarding the increase of inquiry-based activities in an undergraduate biology course. Perhaps most conclusive are the results from a 2008 study

by Tamim et al. which looked for predictive correlations between several elements of course design, such as use of technology and students' perceptions of course effectiveness. Regression analysis of the data revealed the three course elements most predictive of perceived course effectiveness were those most closely aligned with the APA's LCP (Tamim et al., 2008).

The fourth, and final, area of research data regarding the positive impacts of LC teaching methods described the impacts of these strategies on the motivation and morale of students and instructors. The majority of findings in this area of research revealed increases in motivation and engagement for both students and instructors participating in coursework utilizing LC methods (Ahn & Class, 2011; Annerstedt et al., 2010; Armbruster et al., 2009; Durso, 2011; Gauci et al., 2009; Tyma, 2009). Two studies in particular, those by Gauci et al. (2009) and by Avard (2009), characterize the increases in motivation seen in students when LC teaching methods are used. Instructors in the Gauci et al. (2009) study noted increased student immersion in subject matter. Avard (2009) recorded marked changes in the attitudes of students regarding the subject matter in her Earth Science course after use of LC methodologies, as indicated by a shift from 27 students reporting they liked science at the beginning of the course to 55 students reporting they liked science by the end of the course. Avard (2009) considered this to be an especially important finding for a course designed to educate pre-service teachers, remarking, "by changing the attitude of prospective teachers toward science, they, in turn, may be more likely to teach more science in their own classrooms" (p. 28).

Several studies document the increases in motivation and job satisfaction seen in instructors when LC teaching methods are used. Instructors in the study conducted by

Pucha and Utschig (2012) described the teaching and learning experience using LC techniques as more enjoyable. Instructors in the study conducted by Shibley et al. (2008) declared themselves to be better teachers as a result of their inclusion of popular literature as a tool to increase student understanding of course content. Increases in job fulfillment described by instructors in the Lewis et al. (2010) were attributed to the ability the creative exercise technique afforded them to quickly identify and correct student misconceptions regarding subject matter in their chemistry course.

In the Annerstedt et al. (2010) study, one instructor ascribed her increased gratification with her work to the atypical demands of LC teaching. This teacher stated, "With problem based learning I am constantly challenging myself to respond to the questions posed by creative minds. It is infinitely more challenging as an educator" (Annerstedt et al., 2010, p. 117). Two studies recorded positive gains in job attributes outside of the area of teaching responsibilities when LC methods were employed. Salter et al. (2009) documented an increase in scholarly work, such as publication and presentations, following PD sessions focused on incorporating LC teaching methods into online courses. Marcketti (2011) remarked the instructor's body of knowledge had widened with the research and findings students turned in for their student choice projects in a history of dress course.

Potential negative impacts. Although most of the findings regarding the impacts of LC teaching were positive in nature, there were enough documented negative impacts to justify a review of these findings. Study participants most frequently chronicled negative impacts during the early stages of implementation of the LC strategy. Students tended to express frustration or anxiety due to lack of direct instruction (Ahn & Class,

2011; Annerstedt et al., 2010; Tyma, 2009; Walker, 2009). Students also worried about the amount of work the alternative teaching strategy would require of them (Armbruster et al., 2009; Hains & Smith, 2012; Shibley et al., 2008; Wohlfarth et al., 2008).

Initially, instructors tended to express hesitation at the prospect of sharing power or becoming partners with students (Ahn & Class, 2011; Durso, 2011; Hains & Smith, 2012; Hora & Holden, 2012; Tyma, 2009). As LC teaching methods were employed, instructors then communicated frustration and helplessness regarding student reactions. A typical example came from an instructor in the Ahn and Class (2011) study who noted one student "at a complete loss for the first 10 minutes of the [LC] activity" (p. 276). Later, the same student confronted the instructor who noted the "student was physically upset, using a harsh tone in his questions and had a flushed face" (Ahn & Class, 2011, p. 275).

Some of the concerns from instructors were noted at the conclusion of the course in which LC strategies had been implemented. Instructors remarked on the large amount of time and work required by the strategies (Marcketti, 2011; Tyma, 2009). An instructor in the Wang et al. (2010) study on the impact of a video-capture software program as an LC strategy in a golf course described feeling "overwhelmed by the responsibilities" (p. 355) required by the LC teaching method. Other instructors lamented the lack of time left in class to cover required material (Pucha & Utschig, 2012; Wohlfarth et al., 2008). Schumacher and Kennedy (2008) noted instructors implementing group work in undergraduate introductory business math courses were anxious and concerned about not having been able to cover all required material from the assigned text.

While these negative impacts should not be considered trivial, it should be noted the majority of these concerns were reported by study participants to have been ameliorated by the end of the studies (Ahn & Class, 2011; Durso, 2011; Shibley et al., 2008; Tyma, 2009; Wohlfarth et al., 2008). An instructor who had initially described being nervous and uncomfortable in the Hains and Smith (2012) study, by the end of the study reported being able to "see the beauty of the process and delivery in its organic form. I now understand that this course was much more educational than I first believed" (p. 369). A student in the Hains and Smith (2012) study who had recounted a sense of dread regarding the LC experience expressed her thoughts at the end of the study by stating the experience was "monumental and something that I never would have gained from a classroom" (p. 367).

There were, however, a few unresolved or permanent negative impacts found among study results. These include both detrimental effects to students and instructors employing LC teaching methods. In the study by Yadav et al. (2011) in which students were taught consecutive concepts in an electrical engineering course with alternating LC and non-LC strategies, students conveyed feeling they learned less about the course concepts taught using LC strategies. Similarly, students taught using LC strategies in the study conducted by Walker et al. (2008) reported feeling less confident about their understanding of course material than their peers who had been taught using traditional TC methods. Walker et al. (2008) also found student ratings of instructors were lower in the sub-sections of the undergraduate biology course which had been taught using LC strategies. Harris and Cullen (2008b) stated, in addition to the impact LC strategies can have on student-based evaluations, use of LC strategies during a classroom observation

will result in a poor evaluation outcome if the evaluation tool is not based on LC principles. Although one study has addressed these impacts, these issues remain largely unresolved (Frick, Chadha, Watson, & Zlatkovska, 2010).

Finally, two studies called attention to potential ethical dilemmas introduced with the adoption of LC strategies. The use of the virtual online world, Second Life, in the study by Schiller (2009) introduced students to "potential harm and unexpected incidents" (p. 378) because the instructor had no control over the content or individuals outside of the virtual course environment. The experiential learning course designed by students in the Hains and Smith (2012) study involved an off-campus trip in which students camped for 12 days in close quarters in remote areas. The instructor of this course noted uneasiness about providing adequate supervision during these experiences in light of the fact two of the students in the course were dating and two were under the legal drinking age (Hains & Smith, 2012). Although it could be argued these dilemmas were unique to the strategies selected by these instructors, an instructor adopting LC teaching technique should be aware of these potential issues.

The Future of Community Colleges and Learner-Centered Teaching

Many influential voices are now calling upon community colleges to become the principle avenue through which undereducated Americans will be provided with skills and knowledge for the future (21st-Century Commision on the Future of Community Colleges, 2012; Alliance for Excellent Education, 2012; AACC, 2010; Boggs, 2010; Kelderman, 2011). Indeed, in a 2009 speech introducing his American Graduation Initiative, President Barack Obama definitively conveyed his vision of the role community colleges would play in the future:

> Now is the time to build a firmer, stronger foundation for growth that will not only withstand future economic storms, but one that helps us thrive and compete in a global economy. It's time to reform our community colleges so that they provide Americans of all ages a chance to learn the skills and knowledge necessary to compete for the jobs of the future. (The White House Office of Press Secretary, 2009, p. 1)

Typically, the skills and knowledge the president references are identified by experts as including problem-solving skills, critical thinking skills, the ability to synthesize and evaluate information from variety of sources, and the ability to shift seamlessly from one task to another (Alliance for Excellent Education, 2012; Boggs, 2010; National Leadership Council for Liberal Education and America's Promise, 2007). In its *Degree Qualifications Profile*, the Lumina Foundation specifically delineates five basic areas of learning that institutions of higher education should provide in order for students to be successful in the future (Lumina Foundation, 2011). Only one of the five refers to content-based knowledge, while the remaining four areas focus solely on integration and application of knowledge (Lumina Foundation, 2011). These process-oriented, rather than product-oriented, goals align precisely with the tenets of LC teaching (Blumberg, 2009; Weimer, 2013).

Other prominent organizations have echoed the president's call for increased community college enrollment, but go a step further and call specifically for LC teaching in community colleges. In its recommendations, the 21st Century Commission on the Future of Community Colleges calls for community colleges to "change their institutional characteristics… *from* a focus on teaching *to* a focus on learning" (p. *x*). The Alliance for

Excellence in Education (2012) calls for a shift "from a teacher-centric culture to one that supports learner-centered instruction" (p. 1). Typically, community colleges' reputation for reducing barriers to post-secondary education, such as access and cost is credited with the increased media and public focus on community colleges in the last decade (Boggs, 2010). There are currently 986 public community colleges in the United States (AACC, 2012). Enrollment data from the fall semester of 2011 showed these public two-year institutions served just over seven million students, representing approximately 47% of the total enrollment in public post-secondary institutions (NCES, 2012b). Data from the 2011-12 academic year showed the average in-district academic year price of attendance of a two-year institution was $2,912 compared to the in-district cost of attendance of a four-year institution at $7,228 (NCES, 2012c).

A shift to LC teaching in community colleges, if it occurs, could not only be anticipated to benefit students, but to provide value to community college faculty as well. As described previously, LC teaching has been demonstrated to increase faculty engagement in the teaching process (Annerstedt et al., 2010; Lewis et al., 2010; Marcketti, 2011; Pucha & Utschig, 2012; Salter et al., 2009; Shibley et al., 2008). This will be of singular importance as the membership of community college faculty begins to change. Generally, faculty at the fledgling community colleges of the 1950s and 1960s were drawn from K-12 schools and had a strong pedagogical background in LC practices (Lail, 2009). However, most of these faculty are either approaching retirement or have retired (Berry et al., 2001). The new core of community college faculty is composed primarily of individuals who had never intended to work in the field of education, and therefore, have little, if any, training in pedagogy (Lail, 2009). Researchers have

suggested this change in demographic will have a negative effect on the learner-centeredness of community college teaching practices, even in light of a greater institutional commitments to LC practices (DeVries, 2002; Evelyn, 2001; Matthews, 2003).

Summary

In this review of literature, the influences of varying historical and social philosophies on the principles and goals of higher education in the United States have been chronicled. The contexts in which higher education has functioned can be seen to have fluctuated between two extremes, educating citizens versus educating technicians (Wilhite & Silver, 2005). Some have argued the contradictory measures taken to serve these contrasting ideals are the source of the perceived dysfunction in educational systems today (Bankston III, 2011; Wise, 2008). However, others have deemed the description of these ideals as incongruent as a "false dichotomy" (Wilhite & Silver, 2005, p. 1), and insist higher education need not choose sides in this debate.

Indeed, in accordance with the pragmatist perspective of this study, Cantor (1997) proposed these seemingly disparate ends can be actually achieved using the same means. Cantor (1997) suggested institutions of higher education set the following objectives; "Increase understanding of learning theories and cognitive development, meet the needs of nontraditional learners with diverse learning modalities . . . and, critique current methods of cognitive evaluation" (p. 17). A review reveals these proposed objectives to be entirely aligned with the principles of LC teaching. This suggests LC teaching should be an effective way for institutions of higher education to fulfill multiple missions while continuing to effectively serve multiple constituencies. Thus, the findings of this study

could be a valuable tool for community colleges seeking a means to reach the goals they are expected to meet in the approaching decades.

The upcoming chapters will present specific details on the research carried out in this study. Chapter Three will introduce the methodology, population and sample, data collection strategy, and data analysis tools. Chapter Four will provide an analysis of the data which were collected. Finally, Chapter Five will present conclusions drawn from the findings of the study and provide pragmatic suggestions for implementing changes based on these findings.

Chapter Three: Methodology

Learner-Centered teaching methods shift the primary focus of the instructor away from being a provider of content and toward becoming a facilitator of student learning (Weimer, 2013). As enumerated in Chapter Two, application of LC teaching methods has been shown to increase many different types of student learning outcomes by numerous studies (Armbruster et al., 2009; Avard, 2009; Boretz, 2012; Derting & Ebert-May, 2010; Gauci et al., 2009; Kahl & Venette, 2010; Kozar & Marcketti, 2008; Luckie et al., 2012; Pucha & Utschig, 2012; Salinas et al., 2008; Vande Broek et al., 2011; Walker et al., 2008; Yadav et al., 2011). These findings have led institutions to make commitments to an LC approach in an effort to ensure student success (DeVries, 2002; Evelyn, 2001; Matthews, 2003). This has been especially true in the community college setting, where students are increasingly underprepared for traditional curriculum (Lail, 2009).

This chapter will briefly reconsider the problem addressed by this study. The research questions and hypotheses that guided data collection and analysis will be reviewed. The bulk of this chapter is dedicated to providing a comprehensive rationale for and description of the methodology employed in the study. Also included in this chapter is a description of the population and sample studied along with a detailed depiction of instrument design, data collection, and data analysis used in this study.

Problem and Purpose Overview

As noted in Chapter One, there is no standardized quantitative measure currently used to determine the extent to which an institution is LC. This can potentially be problematic in the current era of increased demand for accountability and transparency in public institutions (Basken, 2012; Hains & Smith, 2012; Kanter, 2011; Lederman,

2013a). Without a measure of the use of LC practices by its faculty, an institution has no way of knowing if it is meeting its established goal of being LC (Blumberg & Pontiggia, 2011). Nor does it have a means to systematically address any lack of LC practices in its faculty (Doyle, 2011).

This study had two main goals. First, this study attempted to rate full-time general education faculty at Missouri community colleges in regards to their use of LC teaching methods. Second, the study looked for significant differences between the use of LC teaching methods by full-time general education faculty members at these institutions and three possibly related elements. These three elements included the faculty member's amount and type of training in pedagogy, years of teaching experience, and academic discipline.

Research questions and hypotheses. The following research questions guided the study:

1. Based on Blumberg's scale, how do full-time general education faculty at Missouri community colleges rate in regards to the use of LC teaching methods?

2. Based on Blumberg's scale, does a full-time general education faculty member's use of LC teaching methods significantly differ by the faculty member's amount and type of training in pedagogy?

$H2_0$: The mean LC score will be statistically equal across all groups of full-time faculty with differing amounts and types of training in pedagogy.

$H2_a$: At least one mean LC score will not be statistically equal across groups of full-time faculty with differing amounts and types of training in pedagogy.

3. Based on Blumberg's scale, does a full-time general education faculty

member's use of LC teaching methods significantly differ by the faculty member's years of teaching experience?

$H3_0$: The mean LC score will be statistically equal across all groups of full-time faculty with differing years of teaching experience

$H3_a$: At least one mean LC score will not be statistically equal across groups of full-time faculty with differing years of teaching experience.

4. Based on Blumberg's scale, does a full-time general education faculty member's use of LC teaching methods significantly differ by the faculty member's academic discipline?

$H4_0$: The mean LC score will be statistically equal across all groups of full-time faculty in differing academic disciplines.

$H4_a$: At least one mean LC score will not be statistically equal across groups of full-time faculty in differing academic disciplines.

Research Design

This study was quantitative in nature. Traditionally, scholarly work in the field of education has been qualitative, or descriptive, in nature (Doyle, 2011). However, the current impetus is for greater amounts of quantitative research on teaching and learning (Weimer, 2006). The purpose of the study was not to understand the motivations of the faculty involved in the study, but instead to "establish a factual reality" (Fraenkel, Wallen, & Hyun, 2011, p. 15) that could be generalized to a larger population for later use. As this study was the first of its kind, it was appropriate to use a quantitative tool, such as a survey, to gain a broader perspective of the issue which could be used to inform later research (Creswell, 2013).

This study aimed to draw comparisons between individuals, a task for which either correlational or causal-comparative quantitative approaches could be used (Johnson, 2001). However, due to the inability of the researcher to directly manipulate the independent variables under study, namely an instructor's amount and type of training in pedagogy, years of teaching experience, and academic discipline, it was most appropriate for this study to be causal-comparative in design (Bluman, 2010). Stated more specifically, this study had to be a causal-comparative study as it sought to "measure differences between groups that were not created by the researcher" (Cohen, 2001, p. 8). Furthermore, the study was causal-comparative in design as some of the data collected, as described in further detail in the upcoming data analysis instrumentation section, were categorical, rather than numerical, in nature (Fraenkel et al., 2011; Johnson, 2001).

Population and Sample

The target population for this study was full-time general education faculty members currently teaching at Missouri community colleges. A calculation of the total number of full-time faculty at Missouri community colleges shows this population to be 1,1546 (NCES, 2013). However, the number of these faculty who can be considered general education faculty could not be directly calculated. Recent research on this population indicated the population size to be approximately 800 (O'Connor, 2013).

There were no sampling methods employed to establish the sample from this population. Instead, the number of faculty who chose to respond to the survey determined the size of the sample. A review of literature prior to data collection indicated the researcher could have expected between a 20-30% return rate (Cook, Heath, &

Thompson, 2000; Fink, 2003). It was estimated that the sample size for this study would be between 160 and 240 respondents.

Instrumentation

Instrument rationale. The data collection tool utilized for this study was a self-administered, unsupervised, electronic survey questionnaire (Fink, 2003; Fraenkel et al., 2011). The selection of this particular type of instrument was dictated by several aspects of the study design. First, a survey was the most suitable tool for collecting data from a large sample covering a wide geographic area (Fink, 2003). A survey was also the most fitting instrument for describing characteristics of a sample, such as teaching methods, amount and type of training in pedagogy, years of teaching experience, and academic discipline (Fraenkel et al., 2011). Finally, in order for the analysis of data collected in this study to be of use in answering the research questions, it was imperative participants answer the questions honestly. The ability to remain anonymous promotes truthfulness in replies, and a survey is appropriate for allowing respondents this anonymity (Bluman, 2010).

Instrument construction. The survey in this study consisted of 34 questions, grouped by topic (see Appendix B). The questions in the first group were filtering questions, which served to ensure each potential respondent truly fell within the target population. The first filtering question asked each respondent to indicate his or her informed consent for participation in the study. The second filtering question affirmed each respondent was currently employed as a full-time faculty member at a Missouri community college and did teach general education courses at that college. The placement of these relatively simple questions at the start of the survey instrument was

consistent with survey design principles to promote survey completion (Fink, 2003; Iarossi, 2008). For both filtering questions, a response of "no" directed the respondent away from the remainder of the survey.

The second group included questions taken, with permission, from the rubrics created by Blumberg (2009) in her text, *Developing Learner-Centered Teaching: A Practical Guide for Faculty*. Each of these 29 questions functioned to operationalize the teaching method employed by the respondents. This was accomplished by asking each respondent to rate him or herself on a distinct aspect of teaching, such as use of open-ended assignments or use of formative assessment (Blumberg, 2009). For each question, the respondent's answer choices were weighted by being associated with a score from 1-4. A score of 4 for a given question indicated the respondent employed an LC approach in regards to the particular aspect of teaching under scrutiny in that question. A score of 1 for a given question indicated the respondent engaged in a TC approach. Scores of 2 and 3 indicated the respondent to be transitioning toward LC approaches.

The rubric developed by Blumberg (2009) was originally intended to be used by an outside observer to determine the LC status of an individual course based first, on examination of written course materials, such as syllabi and secondly, from follow-up classroom observations or instructor interviews. As this research asked an instructor to directly evaluate his or her own teaching, Blumberg's original criteria were, with permission, slightly altered. The wording of the questions was changed from third-person to first-person. Phrasing was also modified, when necessary, to change the criteria from statements to questions. The order of the scale of the rating choices, 1 through 4,

was consistent among all 29 questions in order to reduce respondent confusion (SurveyMonkey, 2008).

Using direction provided by previous similar research, and guidance from Dr. Blumberg, the third and final grouping of questions was developed by the researcher to create a profile of each respondent (Blumberg & Pontiggia, 2011; P. Blumberg, personal communication, October 10, 2012). Previous research had indicated amount and type of training in pedagogy, years of teaching experience, and academic discipline would have had the greatest impact on a faculty member's teaching methods (Lail, 2009; Matlin, 2002; O'Meara et al., 2009). The profile questions in this study inquired into these three areas. Phrasing of these researcher-originated multiple choice and rating scale-type questions was prudently devised to stand up to the various criteria for best-practices in closed-ended question construction set forth in the literature (Fink, 2003; Fraenkel et al., 2011; Iarossi, 2008). The question regarding the respondent's place of employment, potentially the most sensitive, was purposely placed at the end of the survey with the intent to prevent respondent bias in answering earlier questions regarding preferred teaching methods and to ensure each respondent had adequate exposure to the survey to build trust in the purpose of the survey (Fink, 2003; Iarossi, 2008). To further this trust, respondents were reminded the names of individual institutions would not be identified in the publication of the research findings.

All questions in this survey were presented primarily in a closed-ended format in an effort to standardize the data collection process (Fraenkel et al., 2011). However, all questions also had a response choice of "other" as an option for each question with a corresponding entry field for free text responses. This was designed to ensure each

respondent felt his or her true response could be communicated and collected in an attempt to prevent respondent frustration (Fraenkel et al., 2011). For the purpose of data analysis, each free response given by a respondent was interpreted by the researcher, with the assistance of notes provided by Dr. Blumberg in her scoring rubrics, into the most appropriate closed-ended response for each question, if possible. If answers were unable to be coded, no score was assigned.

The appearance and overall format of the survey instrument was optimized for maximum response rate through the use of online software provided by SurveyMonkey. Literature suggested questions with cluttered formatting and an unappealing visual layout in a survey decrease response rates (Fraenkel et al., 2011). The use of third-party survey software available to individuals, such as SurveyMonkey, should have minimized any response bias that may have emerged had software available only to specific institutions, such as Remark, been used (Borque & Fielder, 2003).

Field testing. The survey was field tested, or pilot tested, by faculty members at one Missouri community college who did not fall within the target population for the study, either due to employment status or academic discipline. The faculty chosen were an appropriate pilot group for this study as they had academic backgrounds and classroom experiences analogous to the target population. The pilot version of the survey was administered to 10 respondents (Fink, 2003).

The pilot version of the survey included three supplementary questions in addition to those described previously (see Appendix C). These supplementary questions were open-ended and designed to allow the pilot respondents to communicate opinions and inquiries about the primary survey questions and the survey instructions to the researcher.

The researcher used this information to refine and clarify the survey before it was used for data collection (Fraenkel et al., 2011). Additionally, pilot respondents were asked to report the time it took to complete the survey. The average completion time of the pilot respondents was used by the researcher in creation of an introductory email invitation to participants (see Appendix D) and in the final version of the survey.

Instrument reliability and validity. In order for conclusions of quality to be drawn from the data gathered from this research, the instrument used to collect the data needed to be both reliable and valid (Fraenkel et al., 2011). Although reliability and validity are not wholly discrete aspects of research, they are defined independently of one another. Reliability refers to the repeatability or consistency of results, whereas validity is concerned with the integrity of the results (Bryman, 2012). A reliable instrument will give consistent results from one administration to the next (Fraenkel et al., 2011). A valid instrument will give results that accurately and appropriately address the question investigated by the research (Seltman, 2013).

Blumberg's rubrics, as written, have been field tested and revised for six years to ensure content and construct validity (Blumberg & Pontiggia, 2011). The adaptation of Blumberg's rubric criteria into rating-scale questions with weighted answer choices and the use of these scaled scores in reviews of course materials by outside observers was established to be reliable through inter-rater reliability scores as measured by the Concordance Correlation Coefficient (Blumberg & Pontiggia, 2011). However, as this study represented a novel use of Blumberg's rubrics, the reliability and validity of this particular approach needed to be reestablished.

The reliability of the survey instrument in this study was determined through the test-retest method during the field test. All pilot respondents were asked to take the survey twice, with at least a two day time frame between each attempt (Marx, Menezes, Horovitz, Jones, & Warren, 2003). The correlation between the numeric responses for each respondent for each administration was calculated using the correlation tool in the Data Analysis Add-In for Microsoft Excel. This was considered to be the reliability coefficient, or Pearson's *r*, for this instrument (Webb, Shavelson, & Haertel, 2006). The reliability coefficient of this instrument was .83. Generally, an instrument that scores a reliability coefficient of .70 or greater is considered to be acceptable for research purposes (Fraenkel et al., 2011).

Determination of instrument validity was less straightforward than establishment of instrument reliability. There was no single piece of evidence that could be used to determine validity, as there are numerous factors which influence this aspect of experimental design (Fraenkel et al., 2011). Seltman (2013) considered five potential threats to a study's validity; internal validity, construct validity, external validity, type I error, and power. There is no numeric cut-off value for concluding if a study is acceptable in terms of validity. Instead, a study is projected to be either high or low in terms of each aspect of validity, a judgment made by carefully considering the measures taken by the researcher to minimize each potential threat.

A study with high internal validity will provide unambiguous evidence of a clear causal relationship between two or more variables (Fraenkel et al., 2011). Studies which are experimental in design, with measures, such as random assignment to treatment groups, use of control groups, and blinded procedures, have the highest internal validity

(Seltman, 2013). Causal conclusions can be drawn from such experimental studies (Fraenkel et al., 2011). Studies which do not employ these strict protocols are observational, rather than experimental in design, and have low internal validity. In that this study was observational, rather than experimental, it had low internal validity. As such, the researcher was not able to draw causal conclusions, but instead was only be able to make statements about the association of the variables under study (Seltman, 2013).

Construct validity considers whether or not measures, or values, from an instrument genuinely represent the concepts under examination (Fraenkel et al., 2011). An instrument with high construct validity will have measures which correlate highly with measures from a previously well-established instrument, a so-called gold standard, for the concept being investigated (Seltman, 2013). At the time this study was conducted, the rubric presented by Blumberg (2009) in her book, *Developing Learner-Centered Teaching: A Practical Guide for Faculty*, was the only quantitative instrument available to determine the extent of LC teaching in a course. As this study directly used, with permission, Blumberg's rubrics, it was nearly identical to the exemplary criterion for measuring this concept. This survey, therefore, had high construct validity.

The external validity of this study was also high. External validity refers to the "generalizability or transferability" (Fraenkel et al., 2011, p. 565) of a study's results. Evaluation of external validity demands the researcher consider the feasibility of extending and applying the findings of the research to "expanding spheres of subjects who might be similar to your subjects" (Seltman, 2013, p. 202). The absence of a sampling method in this study should have increased external validity. The sample should have been representative of the larger population being studied because no participants

were excluded by design. It follows that the number of participants largely determined the external validity of this study. A high response rate would have suggested high external validity, whereas a high non-response rate would have implied low external validity (Seltman, 2013). However, as external and internal validity are inversely related, even prior to data collection, this study could be projected to have high external validity due to its low internal validity (Berg & Latin, 2004).

Both type I error and power are related to the statistical analyses used to interpret the data obtained in the study. A type I error occurs when a researcher rejects a null hypothesis (H_0) that is actually true (Bluman, 2010). There was no way to completely eliminate the potential of making a type I error (Seltman, 2013). In this study the probability of making a type I error was reduced by choosing an appropriate level of significance, or α, in all statistical tests used. In this study, α was set at .05; therefore, the probability rejecting a true H_0 was limited to 5% or less.

The power of a study refers to the likelihood the researcher will make a type II error (Seltman, 2013). A type II error occurs when a researcher fails to reject a H_0 that is actually false (Bluman, 2010). This study had relatively high power as the power of a study increases with the study's sample size (Bluman, 2010; Seltman, 2013). Additionally, power is inversely related to variability, specifically measurement variability, environmental variability, and subject-to-subject variability (Seltman, 2013). The high reliability of the instrument, as discussed previously, should have ensured low measurement variability. The standardized delivery method and survey formatting should have reduced environmental variability. The shared academic and professional

backgrounds of potential participants in this study should have decreased subject-to-subject variability. Therefore, this study should have had high power.

Data analysis instrumentation. Data, in the form of responses collected from this study's survey, represented two statistical types of variables, or levels of measurement; nominal categorical and discrete quantitative. Data collected from the questions regarding amount and type of training in pedagogy, number of years teaching experience, and academic discipline were considered nominal categorical variables. It was appropriate to consider each of these variables as nominal and categorical for this study as the data collected fell into mutually exclusive categories, or answer choices, for each trait (Bluman, 2010). It should be noted that although data collected on the number of years of teaching experience could have fit the definition of a quantitative variable, as only six categories, or levels, of years were presented as possible responses in this study's survey, it was most fitting to treat this variable as categorical (Bluman, 2010). The decision to present these answers as categories was made in an effort to maintain a standardized format throughout the survey, a key to maintaining certain aspects of validity (Seltman, 2013).

The answer choices a respondent was presented for the question regarding amount and type of training in pedagogy were: *none at all, a little through college coursework for my degree(s), a little through professional development offered through my employer, a little through professional development offered outside my employer, a moderate amount through college coursework for my degree(s), a moderate amount through professional development offered through my employer, a moderate amount offered through professional development offered outside my employer, a great deal through college*

coursework for my degree(s), a great deal through professional development opportunities offered through my employer, and *a great deal through professional development opportunities offered outside my employer.* The answer choices for the question regarding years of teaching experience were: *0-2 years, 2-5 years, 5-10 years, 10-15 years, 15-20 years,* and *20+ years*. The answer choices for the question regarding academic discipline were: *Oral and Written Communication, Humanities and Fine Arts, Mathematics, Life and Physical Sciences,* and *Social and Behavioral Sciences.*

An average LC score for each respondent was calculated using, with permission, rubrics developed by Dr. Blumberg (2009) in her book, *Developing Learner Centered Teaching: A Practical Guide for Faculty.* The LC score was a discrete quantitative variable because the data collected were numerical and countable (Bluman, 2010). Values for this variable ranged between a minimum of 1 and a maximum of 4. Each respondent earned a score of 1, 2, 3, or 4 for each of the 29 questions based on Blumberg's rubrics, depending on his or her answer regarding his or her preferred teaching methods. The average LC score was then calculated for each respondent by finding the average, or mean, of these 29 scores (Blumberg & Pontiggia, 2011).

The responses for questions regarding training in pedagogy, number of years teaching experience, and discipline for each respondent were each considered separately as an independent, or explanatory, variable in this study (Seltman, 2013). In a traditional experimental procedure the researcher would have manipulated the independent variable in order to measure its influence on the outcome variable (Bluman, 2010). Although the researcher in this study did not directly manipulate the independent variables with a specific treatment, these variables can still be classified as explanatory as they were

presumed by the researcher to be influences which will affect the use of LC practices of an instructor (Fraenkel et al., 2011). The average LC score of each respondent was considered the sole dependent, or outcome, variable for this study, as the average LC score was used to determine the impact of the independent variables described previously (Fraenkel et al., 2011).

Data collected from this survey instrument were analyzed using both the provided statistical functions in Microsoft Excel and the Data Analysis Add-In for Microsoft Excel. Four separate sets of analyses were performed, one for each of the study's research questions. To address the first research question, descriptive statistics of all average LC scores were obtained (Bluman 2010). For the remaining three research questions, both descriptive and inferential analyses were performed on the grouped responses (Bluman, 2010; Seltman, 2013). First, for each question descriptive statistics for groups of responses were obtained. Next, for each question a single factor Analysis of Variance (ANOVA) test was performed on the groups of responses. As is standard in academic research, an α of .05 was used in the ANOVA analyses (Bluman, 2010). If the calculated *p*-value led the researcher to fail to reject any of the H_0, contrast testing was performed to identify which mean LC score was significantly different than the rest. The most appropriate unplanned post hoc contrast tests to perform were a series of one-tailed *t*-tests (Seltman, 2013). To minimize the chance of making a type I error during post hoc data analyses, the significance level was adjusted using the Bonferroni correction (Seltman, 2013). An overview of the alignment of the research questions and data analysis methodologies are presented in Table 1.

Table 1

Alignment of Research Questions and Data Analysis Methodologies

Research Question	Type of Test	H_O	H_a
1	*f, M*	N/A	N/A
2	*f, M,* single factor ANOVA[a]	The mean LC score will be statistically equal across all groups of full-time faculty with differing amounts and types of training in pedagogy.	At least one mean LC score will not be statistically equal across all groups of full-time faculty with differing amounts and types of training in pedagogy.
3	*f, M,* single factor ANOVA[a]	The mean LC score will be statistically equal across all groups of full-time faculty with differing amounts and types of training in pedagogy.	At least one mean LC score will not be statistically equal across all groups of full-time faculty with differing amounts and types of training in pedagogy.
4	*f, M,* single factor ANOVA[a]	The mean LC score will be statistically equal across all groups of full-time faculty with differing amounts and types of training in pedagogy.	At least one mean LC score will not be statistically equal across all groups of full-time faculty with differing amounts and types of training in pedagogy.

Note. f = frequency, M = mean, H_0 = Null Hypothesis, H_A= Alternative Hypothesis, LC = Learner-Centered

[a] If a significant difference was found, contrast testing using a series of one-tailed *t*- tests comparing each group to all other groups was performed. The penalty for post hoc testing was applied using a Bonferroni correction to the value of α.

Data Collection

After obtaining permission from the Lindenwood University Institutional Review Board (IRB) (see Appendix E), an email was sent to the Chief Academic Officer (CAO), such as the Provost or Dean of Academics, at each institution to be included in the study (see Appendix F). This email informed each CAO of the intent of the researcher and asked the CAO if he or she would feel comfortable endorsing this survey to his or her

faculty. Each CAO was offered the option of a customized report of the survey findings for his or her institution if such endorsement was given.

After the responses from the CAOs were received, a semi-personalized email invitation containing the information prescribed in the Lindenwood IRB adult consent form, a request for respondent participation, and a hyperlink to the survey instrument was delivered to the institutional email account of potential respondents from a personal email account created by the researcher for the purposes of this study. Sending an email that was as personalized as possible to each potential respondent should have increased the response rate to the survey (Fraenkel et al., 2011). Creation of a personal email account used solely for the purposes of this study by the researcher was intended to prevent bias due to data collector characteristics such as age, gender, and ethnicity (Fraenkel et al., 2011). This initial email invitation also notified each potential participant that his or her institution's CAO had endorsed the survey, if such endorsement was given. The inclusion of this approval from the highest-ranking academic officer of the potential respondent's institution should have increased the response rate (Fraenkel et al., 2011).

The survey was available for three weeks during the fall semester of 2013. The researcher attempted to align these three weeks with a time in the semester when a faculty member's duties were typically the least demanding. Timing of a request to complete a survey during a busy time in a respondent's schedule could have decreased response rate (Iarossi, 2008). The initial email invitation was sent to all potential respondents the day the survey opened. One week after the initial email, the researcher performed a check of participation. A thank you email (see Appendix G) was sent to all respondents who had participated in the study, and a reminder email (see Appendix H)

was sent to all of the initial potential respondents who had not yet completed the survey. This procedure was repeated two weeks after the initial email invitation. A final round of thank you emails was sent to all respondents when the survey closed. The thank you emails served as the respondent's permanent record of the informed consent documentation.

The adoption of the three week time frame was supported by an analysis conducted by SurveyMonkey of 500,000 survey responses gathered through their software between 2009 and 2010. This analysis established that, no matter the sample size, 80% of total responses ultimately collected for any given survey were collected within the first seven days after launch (SurveyMonkey, 2011). The same analysis ascertained that 11% more and 4% more responses were collected in the second and third week, respectively (SurveyMonkey, 2011).

Data Analysis

At the conclusion of data collection, raw data from the electronic survey were first downloaded as a Microsoft Excel file. To ensure respondent anonymity, the names and email addresses of the respondents were deleted, leaving only the randomly generated alphanumerical code provided by the SurveyMonkey program to identify each respondent. The next task was to mask the responses regarding each respondent's place of employment using an alphabetical code known only to the researcher. The key to this code was maintained in a password-protected electronic document and was not published with the findings of the study. The overall LC score for each respondent was then calculated. Adhering to the protocol delineated in, *Benchmarking the Degree of Implementation of Learner-Centered Approaches*, this was accomplished by finding the

average of the scores from the 29 questions taken from Blumberg's rubrics (Blumberg & Pontiggia, 2011). From this point forward in data analysis, the researcher used only this overall, or average, LC score for each respondent.

In order to assess the first research question, (*Based on Blumberg's rubrics, how do Missouri community college full-time general education faculty rate in their use of LC teaching methods?)*, all of the LC scores were analyzed using the descriptive statistics tool on the Data Analysis Add-In for Microsoft Excel. Descriptive statistics were the appropriate statistical method to organize, summarize, and present data sets (Bluman, 2010). An ANOVA was the most appropriate statistical analysis to use in order to address the remaining three research questions; if full-time general education faculty who differed in their answer choices for of the each of the three explanatory variables differed significantly in their reported use of LC teaching methods. An ANOVA examines equality of sample means for a single quantitative outcome variable and a categorical explanatory variable with more than two levels (Seltman, 2013).

In this study, three ANOVA tests were performed, one for each explanatory variable. For each ANOVA test, it was necessary for the researcher to group the respondents according to their answer choices for each explanatory variable to find the average, or mean, LC score for each group. This grouping was accomplished using the sorting feature in Microsoft Excel. Once the respondents were grouped, the ANOVA test was performed. If the calculated *p*-value led the researcher to fail to reject any of the H_0, post hoc contrast testing through a series of *t*-tests was performed to determine between which groups' means the significance lay. To minimize the chance of making a type I error during post hoc data analysis, the significance level was adjusted using the a

Bonferroni correction (Seltman, 2013). This correction was calculated using the formula provided by Seltman (2013).

For all three ANOVA tests, the quantitative outcome variable was the mean LC score for each group of respondents. The categorical explanatory variables for the first ANOVA were the ten answer choices available for the question regarding a respondent's amount and type of training in pedagogy. The second ANOVA used the six answer choices available for the question regarding a respondent's years of teaching experience as explanatory variables. The five answer choices available for the question regarding the respondent's academic discipline served as the explanatory variables in the third ANOVA.

A series of multiple *t*-tests could, theoretically, have been performed on this data to obtain the same results as an ANOVA (Seltman, 2013). But, in practice, the more *t*-tests conducted on a single sample; the more likely it is for a type I error to be made (Bluman, 2010). Alternatively, a three-way ANOVA could have been performed, as there were three outcome variables in this study (Cohen, 2001). However, this type of statistical analysis would investigate the possible interactions between the explanatory variables (Cohen, 2001), which was beyond the scope of the research questions in this study.

Summary

This quantitative study attempted to address the dearth of information on the use of LC teaching methods by faculty in Missouri community college classrooms. An electronic survey instrument was adapted, with permission, from the rubrics created by Dr. Blumberg (2009). An invitation to participate in the survey was delivered to all full-

time general education faculty in Missouri community colleges whose institutional email address was publicly available. Numerical data collected over a three-week period from the survey were used to assign an average LC score to each respondent. A comparison of these LC scores to categorical data collected from each faculty member on the same survey was statistically analyzed to search for significant differences between a group of faculty members' LC score and the groups' amount and type of training in pedagogy, years of teaching experience, and academic discipline.

In Chapter Four, data collected from this survey will be presented and examined. The demographics of survey respondents will be described in detail. The bulk of the chapter will be dedicated to a discussion of the findings and results from descriptive and inferential statistical analyses, as appropriate, from each of this study's research questions. Chapter Five will discuss the conclusions that can be drawn from this data and propose how these conclusions can be implemented into practical solutions for addressing the problems identified by this study. Chapter Five will conclude with recommendations for further research on the use of LC teaching.

Chapter Four: Analysis of Data

Learner-Centered teaching is a reflective, research-based approach to teaching in which the instructor assumes the role of a coach or mentor to facilitate student learning (Weimer, 2013). The LC model of teaching stems from over 100 years of research on learning in the fields of psychology, education, sociology, and neurobiology (LCP Work Group, 1997). Since its inception, the core principles of LC teaching have been adopted as best-practices for facilitating learning by the APA, the AACU, the AERA, the NSF, the NRC, and the U.S. Armed Forces (Henson, 2003; McCombs & Miller, 2007). As discussed in Chapter Two, numerous studies have demonstrated the impacts LC teaching can have in terms of increasing quantifiable student learning outcomes, positive student perception of instruction, and instructor job satisfaction (Armbruster et al., 2009; Avard, 2009; Boretz, 2012; Derting & Ebert-May, 2010; Gauci et al., 2009; Kahl & Venette, 2010; Kozar & Marcketti, 2008; Luckie et al., 2012; Pucha & Utschig, 2012; Salinas et al., 2008; Vande Broek et al., 2011; J. D. Walker et al., 2008; Yadav et al., 2011). In this chapter, the outcomes from this quantitative study focused on LC classrooms in community colleges in Missouri are discussed and the findings are presented.

Problem and Purpose Overview

A review of websites of Missouri community colleges revealed five of the 12 openly declare themselves as LC institutions. This commitment is made in various ways. A few institutions include the term learner-centered, learning-centered, or student-centered in highly visible institutional documents, such as their mission statements and/or strategic goals. The remaining institutions include such terms in less official documentation, such as college descriptions in advertising materials and course catalogs. All 12 Missouri community colleges are accredited by the HLC and are, therefore,

required to demonstrate best-practices in promoting student learning (HLC, 2012; NCES, 2013).

Despite the clear need for such a metric, there is currently no standardized measure to determine if an institution is meeting its stated goal of being LC (Wright, 2011). Conceivably, this can be a difficulty for an institution in the current era of increased public demand for accountability and transparency (Basken, 2012; Hains & Smith, 2012; Kanter, 2011; Lederman, 2013a). Without any measure of current teaching practices in use by its faculty, an institution's leadership has no way of knowing if instruction is effectively meeting the needs of the students, nor does it have a way of systematically focusing hiring and/or PD efforts on increasing the use of LC teaching methods by its faculty (Doyle, 2011).

There were two main goals for this study. The first goal was to attempt to rate full-time Missouri community college general education faculty in regards to their use of LC teaching methods. An adaptation of the rubrics created by Blumberg (2009) was used, with permission, to make this characterization. The second goal was to look for significant differences between the use of LC teaching methods by full-time general education faculty members at these institutions and three possibly related elements; the faculty members' amount and type of training in pedagogy, years of teaching experience, and academic discipline. A review of the literature revealed these three elements were likely to have had the most impact on a respondent's teaching methods (Lail, 2009; Matlin, 2002; O'Meara et al., 2009).

Summary of Instrumentation and Data Collection

Data were collected using an electronic survey questionnaire. The survey was generated and delivered to the publicly available institutional email accounts of potential respondents using web-based software provided by SurveyMonkey. The survey remained open for data collection for a total of three weeks in the fall semester of 2013. The survey consisted of 34 questions, which were grouped by topic.

The questions in the first group were filtering questions, which allowed the researcher to confirm each respondent gave his or her implied consent, was a full-time faculty member, and taught general education courses. The second group consisted of questions taken from the rubrics created by Blumberg (2009). These questions were organized using a rating scale and constructed with weighted answer choices. Each respondent's answer choices were associated with a score from 1 – 4. A score of 4 for a given question indicated the respondent employed an LC approach in regards to the particular aspect of teaching under scrutiny in that question. A score of 1 for a given question indicated the respondent engaged in a TC approach. Scores of 2 and 3 indicated the respondent to be transitioning toward LC approaches.

The final group of questions functioned to create a profile of each respondent in terms of his or her amount and type of training in pedagogy, years of teaching experience, academic discipline, and the community college where the respondent was employed. The question regarding the respondent's place of employment did not relate directly to the research questions in this study; however, it was included as a part of an effort to increase response rates to the survey. Prior research had indicated inclusion of approval from an authority, such as the highest-ranking academic officer of the potential respondent's institution, could result in an increased response rate (Fraenkel et al., 2011).

In order to gain this approval, an offer of customized results was offered to the highest-ranking academic officer for each institution.

In the next several sections, analysis of data collected from this survey are examined. The first section includes a detailed description of the demographics of survey respondents. A discussion of the response rate to the survey follows. The subsequent four sections present the findings and results from descriptive and inferential statistical analyses, as appropriate, from each of this study's research questions, in order.

Respondent Demographics

The target population for this study was full-time general education faculty members currently teaching at Missouri community colleges. Only public post-secondary institutions offering "programs of at least 2 but less than 4 years duration" (National Governors Association, 2011, p. 25) were included in this study. A list of such community colleges in Missouri was obtained through the MCCA website. Any employee designated as full-time faculty by these institutions, regardless of any given academic rank such as professor, instructor, lecturer, or any equivalent term were considered faculty (NCES, 2012a). For the purposes of this study, participants were considered to be general education faculty if they taught at least one course which fell within the knowledge areas described by the MDHE in its statewide general education policy. By this specific definition respondents were general education faculty if they taught courses within the academic disciplines of Oral and Written Communication, Humanities and Fine Arts, Mathematics, Life and Physical Sciences, Social and Behavioral Sciences (MDHE, 2005).

Recent research on this population indicated the population size of full-time general education faculty teaching in Missouri community colleges to be approximately 800 (O'Connor, 2013). However, the exact size of the population for this study was unable to be determined due to the following unanticipated factors. Since data collection for the O'Connor study (2013), which occurred in 2009, two Missouri community colleges no longer made faculty email addresses publicly available through their websites. This resulted in exclusion of approximately 346 potential participants from the study (NCES, 2013).

A third community college no longer furnished a way of identifying faculty by employment status. This meant full-time and part-time faculty could not be distinguished. This led to the inclusion of approximately 1,358 part-time individuals in the initial email invitation list. As a result, a total of 1,993 email invitations were sent, a number that far exceeded any estimation of the true population size. Fortunately, the first group of questions in the survey filtered out any part-time faculty, so this did not affect the results of the study.

Out of the approximate 454 potential respondents who fell within the population requirements, a total of 155 faculty responded to the survey. Upon an initial review of these 155 responses, responses from 49 respondents were removed due to the respondent's failure to provide informed consent, to fall within the sample parameters, and/or to answer at least one of the questions from the second grouping of questions. This resulted in a functional sample size of 106 respondents.

Reliability and Validity of Results

The reliability of the survey instrument in this study was determined through the test-retest method during the field test. All pilot respondents were asked to take the survey twice, with at least a two-day time frame between each attempt (Marx et al., 2003). The correlation between the numeric responses for each respondent for each administration was calculated. This was considered to be the reliability coefficient, or Pearson's *r*, for this instrument (Webb et al., 2006). The reliability coefficient of this instrument was .83. Generally, an instrument that scores a reliability coefficient of .70 or greater is considered to be acceptable for research purposes (Fraenkel et al., 2011).

The causal-comparative design of this study rendered it to have low internal validity, signifying the results could not be used to draw causal conclusions about the relationships between the variables under study, but only to illustrate associations between those variables (Seltman, 2013). However, the high construct validity of this study did indicate the results could be interpreted as an accurate representation of the concepts under examination (Seltman, 2013). The external validity of this study could be also be considered to be high. Using the estimated maximum sample size of 454, the usable number of responses, 106, represented a 23.3% response rate. This response rate could be considered adequate as a typical response rate for an unsolicited survey is between 20-30% (Cook et al., 2000; Fink, 2003). Consequently, it would be appropriate to generalize the findings of this study to similar populations, such as general education faculty at community colleges in other states (Fraenkel et al., 2011). Considerations of the specific measures taken to reduce the impact the remaining aspects of validity,

namely type I and power, or type II errors, are addressed, as appropriate, in the discussions of the statistical analyses for each of the research questions.

Data Analysis.

Before any data analysis could be performed, the raw data from SurveyMonkey was downloaded and any identifying information beyond SurveyMonkey's alphanumeric identifier for each respondent was deleted. The names of the institutions where respondents were employed were masked for anonymity using an alphabetic code. A copy of the original information was kept in a password-protected file accessible only by the researcher. These procedures were done in compliance with the specifications of the Lindenwood IRB, and are a common measure taken to "ensure that any and all information obtained during a study is not released to outside individuals where it might have embarrassing or damaging consequences" (Fraenkel et al., 2011, p. 69).

Next, all free responses were examined by the researcher and converted to the appropriate numerical or categorical score, using notes provided in the scoring rubrics by Blumberg (2009). Any unknown data were not coded or assigned a score. At this point all free responses were removed and saved in a separate document for later investigation. Finally, the average LC score for each individual respondent was calculated.

Findings from research question 1. The first research question, (*Based on Blumberg's scale, how do full-time general education faculty at Missouri community colleges rate in regards to the use of Learner-Centered (LC) teaching methods?),* was analyzed by obtaining descriptive statistics of the average LC scores. Most responses, 70.75%, fell in the high level of transitioning to LC category (see Table 2). Only 20.75% of the respondents rated their teaching methods as being entirely LC. A combined total

of 79.24% of the respondents rated their teaching methods as transitioning toward LC. No respondents reported using entirely TC teaching methods.

Table 2

Frequency of Average LC Scores

Meaning of LC Score	LC Score	*f*	%
Entirely TC	1.00 – 1.49	0	0.00
Low Level of Transitioning to LC	1.50 – 2.49	9	8.49
High Level of Transitioning to LC	2.50 – 3.49	75	70.75
Entirely LC	3.50 – 4.00	22	20.75

Note. $N = 106$, LC = Learner-Centered, TC = Teacher-Centered, *f* = frequency, % = percentage

The next step in analysis was to calculate measures of central tendency for the average LC score data. This examination allowed the researcher to obtain a single measure of the Learner-Centeredness of each of the respondents, a necessary task for analysis of the remaining research questions. Respondents, on average, rated themselves as being at a high level of transitioning to LC approaches (Blumberg & Pontiggia, 2011), with a mean LC score of 3.14 (see Table 3). The lowest respondent LC score of 2 can be characterized as "minimally using LC approaches" (Blumberg & Pontiggia, 2011, p. 192). The highest mean LC score of 4.00 was reported by only one participant.

Table 3

Central Tendency Data for Respondent LC Scores

M	Minimum	Maximum
3.14	2.04	4.00

Note. $N = 106$, *M* = mean

Findings from research question 2. The second research question, (*Based on Blumberg's scale, does a full-time general education faculty member's use of LC teaching methods significantly differ by the faculty member's amount and type of training in pedagogy?),* was first analyzed by obtaining descriptive statistics of the responses grouped by respondents' reported amount and type of training in pedagogy. The next step was to compare the average LC scores of these groups. An ANOVA was the most appropriate test to perform as it examines equality of sample means for a single quantitative outcome variable and a categorical explanatory variable with more than two levels (Seltman, 2013).

The majority of the respondents answering this question, 93.62%, reported having some degree of training in pedagogy (see Table 4). Among these respondents, 41 rated themselves as having a great deal of training and 47 reported the majority of their training in pedagogy had come from coursework for a degree. Respondents who reported having received a little training in pedagogy through PD offered outside their employer were found to be associated with the highest LC score. The lowest LC score was associated with respondents who reported having a little training through employer-provided PD.

To determine if these observed differences were significant, hypothesis testing was conducted. Using the procedures described in Bluman (2010), the *p* and *F* values obtained by the ANOVA analysis were used to evaluate the H_0 and alternative (H_a) hypotheses. The H_0 was that the mean LC score would be statistically equal across all groups of full-time faculty with differing amounts and types of training in pedagogy. The H_a was that at least one mean LC score would not be statistically equal across groups of full-time faculty with differing amounts and types of training in pedagogy. The *p* value,

.19, was greater than α, .05, and the *F* statistic, 1.42, was less than F_{crit}, 1.99. Therefore, the H_0 was not rejected. Hence, these data supported the null hypothesis, that full-time general education faculty member's use of LC teaching methods did not significantly differ by the faculty member's amount and type of training in pedagogy.

Table 4

Summary of Primary Analysis for Research Question 2

Reported Amount and Type of Training in Pedagogy	*f*	%	LC Score
None at all	6	6.38	2.99*
A little through coursework for my degree(s)	4	4.26	3.20*
A little through PD offered through my employer	11	11.70	2.84*
A little through PD offered outside my employer	5	5.32	3.36*
A moderate amount through coursework for my degree(s)	14	14.89	3.10*
A moderate amount through PD offered through my employer	8	8.51	3.03*
A moderate amount through PD offered outside my employer	5	5.32	3.34*
A great deal through coursework for my degree(s)	29	30.85	3.15*
A great deal through PD offered through my employer	2	2.13	2.99*
A great deal through PD offered outside my employer	10	10.64	3.33*

Note. $N = 94$, f = frequency, % = percentage, LC score = average LC score for group, PD = professional development

*ANOVA $\alpha = .05$, $p = .19$, $F = 1.42$, $F_{crit} = 1.99$

However, as noted in Bluman (2010), a lack of statistical significance does not imply a lack of "practical significance" (p. 419). As the observed differences in the mean LC scores for each group were 81% likely not to be the result of chance, this implied functional use might still be found in the data. As the conceptual framework upon which this study was based focused on finding such pragmatic solutions, further analysis was warranted.

The responses for this question were easily disaggregated into two broader categories, i.e., the respondents' amount of training in pedagogy and the respondents' type of training in pedagogy. So, in order to more clearly comprehend the observed

"practical significance" (Bluman, 2010, p. 419) the data were thus re-grouped and re-analyzed. For each grouping of responses descriptive statistics were first obtained. Then an ANOVA was performed to obtain the appropriate test values.

For the data grouped by the respondents' amount of training, the *p* value, .51, was greater than α, .05, and the *F* statistic, 0.77, was less than F_{crit}, 2.70 (see Table 5). Therefore, the decision from the initial analysis to not reject H_0 was confirmed. This re-grouping of the data continued to support the H_0 that a full-time general education faculty member's use of LC teaching methods did not significantly differ by the faculty member's amount training in pedagogy. The observation that respondents with the least training in pedagogy had the lowest LC scores and respondents with the most training in pedagogy had the highest LC scores was not found to be significant upon statistical analysis.

For the data grouped by the respondents' type, or source, of training in pedagogy, the *p* value, .0038, was less than α, .05, and the *F* statistic, 5.95, was greater than $F_{crit,}$ 3.10. Therefore, contrary to the original decision, the H_0 was rejected. This re-grouped data supported the original H_a, that at least one group of full-time general education faculty members' use of LC teaching methods did significantly differ by the faculty members' type of training in pedagogy. According to Bluman (2010), the value of *p* indicated the difference to be "highly significant" (p. 419).

Table 5

Summary of Secondary Analyses for Research Question 2

Reported Amount of Training in Pedagogy	*f*	%	LC Score
None at all	6	6.38	2.99*
A little	20	21.28	3.04*
A moderate	27	28.72	3.12*
A great deal	41	43.62	3.19*
Reported Type of Training in Pedagogy	***f***	**%**	**LC Score**
Through coursework for my degree(s)	47	53.41	3.14**
Through PD offered through my employer	51	23.86	2.93**
Through PD offered outside my employer	20	22.73	3.34**

Note. f = frequency, *%* = percentage, LC Score = average LC score for group, PD = professional development

* $N = 94$, ANOVA $\alpha = .05$, $p = .51$, $F = 0.77$, $F_{crit} = 2.70$

** $N = 88$, ANOVA $\alpha = .05$, $p = .0038$, $F = 5.95$, $F_{crit} = 3.10$

To determine which of the type of training in pedagogy group's mean LC score differed significantly from the others, additional re-grouping of the data and further hypothesis testing were needed. A series of three post hoc *t*-tests were performed. As the researcher already knew the variation and direction of the differences being tested, a one-tailed *t*-test assuming unequal variances was the most appropriate statistical test to employ to obtain the appropriate test value, a *p* value (Seltman, 2013). For each *t*-test, the H_0 was that no significant difference existed between the groups, and the H_a was that a significant difference did exist between the groups.

These calculated *p* values were used to evaluate the H_0 and H_a using the procedures described in Bluman (2010). In order to maintain a low likelihood of type I error in any post hoc data analysis, applying a penalty is necessary (Cohen, 2001). In this analysis, this penalty was assessed by applying a Bonferonni correction to the original

value of α, .05, yielding a corrected value, hereafter referred to as α_B, of .017 (Seltman, 2013). Since, the calculated *p* value for the comparison of the average LC score from respondents whose training in pedagogy came from coursework for his or her degree compared to all other respondents, .46, was greater than $\alpha_{B,}$ .017, the H_0 was not rejected (see Table 6). Hence, these data supported the H_0, that the difference in the average LC score observed was not statistically significant.

Alternatively, the H_0 was rejected in both of the other post hoc *t*-tests. The comparison of the mean LC score of respondents who reported they had received their training in pedagogy from employer-provided PD to the combined mean LC score of the other groups, yielded a *p* value of .003. The comparison of the mean LC score of respondents whose training in pedagogy came from PD obtained outside their employer to the combined mean LC score of the other groups yielded a *p* value of .006. Both of these *p* values were less than α_B, .017.

Table 6

Summary of Post Hoc Analyses for Research Question 2

	Coursework compared to other types	Employer PD compared to other types	Non-Employer PD compared to other types
p value	.46*	.003*	.006*

Note. PD = Professional Development

*α_B = .017

A consolidation of the findings of the ANOVA analysis and these post hoc *t*-tests would support two notable conclusions. First, respondents who reported receiving their training in pedagogy from employer-provided PD were associated with significantly lower LC scores than other respondents. Second, respondents who reported receiving

their training in pedagogy from PD obtained outside their employer were associated with significantly higher LC scores than the other respondents.

Findings from research question 3. The third research question, (*Based on Blumberg's scale, does a full-time general education faculty member's use of LC teaching methods significantly differ by the faculty member's years of teaching experience?),* was first analyzed by obtaining the descriptive statistics of the responses grouped by respondents' reported years of teaching experience. The next step was to compare the average LC scores of these groups. An ANOVA was the most appropriate test to run as it examines equality of sample means for a single quantitative outcome variable and a categorical explanatory variable with more than two levels (Seltman, 2013).

The majority of the respondents who answered this question, 89.69%, reported having been employed as an educator at an accredited institution for at least five to 10 years (see Table 7). Among these 91 respondents, 29 reported having been employed as an educator for 10 to 15 years. Only one respondent reported having been employed as an educator for less than two years. Respondents who reported having been employed as a full-time faculty member for five to 10 years were found to be associated with the highest LC score. The lowest LC score was associated with respondents who reported having been employed as a full-time faculty member for two to five years.

To determine if these observed differences were significant, hypothesis testing was conducted. Using the procedures described in Bluman (2010), the calculated test values were used to evaluate the H_0 and H_a. The H_0 was that the mean LC score would be statistically equal across all groups of full-time faculty with differing years of teaching

experience, and the H_a was that at least one mean LC score would not be statistically equal across groups of full-time faculty with differing years of experience teaching. The *p* value, .23, was greater than α, .05, and the *F* statistic, 1.39, was less than F_{crit}, 2.31. Therefore, the H_0 was not rejected. Hence, these data supported the H_0, that full-time general education a faculty member's use of LC teaching methods did not significantly differ by the faculty member's years of teaching experience.

Table 7

Summary of Primary Analysis for Research Question 3

Reported Years of Teaching Experience	*f*	%	LC Score
0-2 years	1	1.03	3.10*
2-5 years	9	9.28	2.91*
5-10 years	20	19.59	3.27*
10-15 years	29	28.87	3.16*
15-20 years	22	21.65	3.14*
20+ years	20	19.59	2.99*

Note. $N = 97$, *f* = frequency, *%* = percentage, LC Score = average LC score for group

*ANOVA $\alpha = .05, p = .023, F = 1.39, F_{crit} = 2.31$

However, as the frequencies in the first two response levels, 0-2 years and 2-5 years, were particularly low, the researcher was concerned about the possibility of a type II error having occurred. A type II error arises when a researcher fails to reject a H_0 that is actually false (Bluman, 2010). The likelihood of making a type II error increases when the size of a sample decreases (Seltman, 2013). Therefore, inclusion of these undersized samples in the ANOVA may have led to an inaccurate representation of these data.

To address this concern, the data were re-aggregated into broader categories so the frequencies for each level of response would be larger. Two such re-organizations

were executed to ensure the data were thoroughly analyzed. First, the responses were grouped into three broad categories, *0-5 years, 5-15 years,* and *15+ years*. As described previously, an ANOVA was performed to compare the average LC scores of these groups. Secondly, the responses were then grouped into two broad categories, *0-10 years* and *10+ years*. As this data set only had two groups an ANOVA was no longer appropriate. Instead, a two-tailed *t*-test was performed to obtain the appropriate test values.

The *p* values for the two analyses, .093 and .62 respectively, were greater than α, .05 (see Table 8). The test statistics, $F = 2.43$ and $t = 0.49$, were less than the associated critical values, $F_{crit} = 3.09$ and $t_{crit} = 2.00$. Hence, this re-aggregated data continued to support the H_o that a full-time general education faculty member's use of LC teaching methods did not significantly differ by the faculty member's teaching experience.

Table 8

Summary of Secondary Analyses for Research Question 3

Reported Years of Teaching Experience	*f*	*%*	LC Score
0-5 years	10	14.93	2.93*
5-15 years	47	70.15	3.21*
15 + years	40	14.93	3.07*
0-10 years	29	29.90	3.15**
10+ years	68	70.10	3.11**

Note. $N = 97$, *f* = frequency, *%* = percentage, LC Score = average LC score for group

*ANOVA $\alpha = .05$, $p = .093$, $F = 2.43$, $F_{crit} = 3.09$

***t*-test $\alpha = .05$, $p = .62$, $t = 0.49$, $t_{crit} = 2.00$

Findings from research question 4. The fourth research question, (*Based on Blumberg's scale, does a full-time general education faculty member's use of LC*

teaching methods significantly differ by the faculty member's academic discipline?), was first analyzed by obtaining descriptive statistics of the responses grouped by respondents' reported academic discipline. The next step in analysis was to compare the average LC scores for each of these groups. An ANOVA was the most appropriate test to run as it examines equality of sample means for a single quantitative outcome variable and a categorical explanatory variable with more than two levels (Seltman, 2013).

Most responses came from participants who reported teaching in the areas of Humanities and Fine Arts, Oral and Written Communication, and Social and Behavioral Sciences (see Table 9). The fewest responses came from respondents who reported teaching in the areas of Life and Physical Sciences and Mathematics. Respondents who reported teaching in the area of Oral and Written Communication were found to be associated with the highest LC score. The lowest LC score was associated with respondents who reported teaching in the area of Mathematics.

To determine if these observed differences were significant, hypothesis testing was conducted. Using the procedures described in Bluman (2010), the calculated test values were used to evaluate the H_0 and H_a. The H_0 was that the mean LC score would be statistically equal across all groups of full-time faculty in differing academic disciplines, and the H_a was that at least one mean LC score would not be statistically equal across groups of full-time faculty in differing disciplines. The p value, .016, was less than α, .05, and the F statistic, 3.23, was greater than $F_{\text{crit,}}$ 2.46. Therefore, the H_0 was rejected. These data supported the H_a that at least one group of full-time general education faculty members' use of LC teaching methods did significantly differ by the faculty members'

academic discipline. Indeed, the observed differences could be considered to be "highly significant" (Bluman, 2010, p. 419) as the value of *p* was less than .01.

Table 9

Summary of Primary Analysis for Research Question 4

Reported Academic Discipline	*f*	%	LC Score
Oral and Written Communication	[a]25	26	3.28*
Humanities and Fine Arts	[a]24	25	3.26*
Mathematics	15	15	2.96*
Life and Physical Sciences	15	15	3.05*
Social and Behavioral Sciences	[a]24	25	2.30*

Note. N = 97, f = frequency, *%* = percentage, LC Score = average LC score for group

[a] Seven respondents reported teaching in two academic disciplines, the LC scores from these individuals were included in calculations for both disciplines

* ANOVA $\alpha = .05$, $p = .016$, $F = 3.23$, $F_{crit} = 2.46$

To determine which of the academic discipline group's mean LC score differed significantly from the others, additional re-grouping of the data and further hypothesis testing were needed. A series of five post hoc *t*-tests were performed. As the researcher already knew the variation and direction of the differences being tested, a one-tailed *t*-test assuming unequal variances was the most appropriate test to employ to obtain *p* values for these data. For each *t*-test, the H_0 was that no significant difference existed between the groups, and the H_a was that a significant difference did exist between the groups.

The *p* values were used to evaluate the H_0 and H_a using the procedures described in Bluman (2010), In order to maintain a low likelihood of type I error in any post hoc data analysis, applying a penalty is necessary (Cohen, 2001). In this analysis, this penalty was again assessed by applying a Bonferonni correction to the original value of α, .05, yielding an α_B of .001 (Seltman, 2013).

The *p* value obtained in the comparison of the mean LC score of respondents teaching in the field of Humanities and Fine Arts to the combined mean LC scores from the other disciplines, .036, was greater than α_B, .01 (see Table 10). Therefore, the H_0 was not rejected. Likewise, the calculated *p* values obtained in the comparison of the mean LC score of respondents in the field of Life and Physical Sciences, the field of Mathematics, and the field of Social and Behavioral Sciences to the combined mean LC scores from all other disciplines, .023, .078, and .032, respectively, were also greater than α_B, .01. Again, the H_0 was not rejected in any of these comparisons. This meant the differences observed between the mean LC scores for these groups and the remainder of the respondents could not be considered to be statistically significant.

However, the *p* value obtained in the comparison of the mean LC score of respondents teaching in the field of Oral and Written Communication to the combined mean LC score from the other disciplines, .0025, was less than α_B, .01. Therefore, the H_0 was rejected, and the H_a, that the observed difference in the mean LC score of respondents teaching in the field of Oral and Written Communication was significant, was concluded. A consideration of both the results of the initial ANOVA and the post hoc *t*-test supported the conclusion that respondents teaching in the field of Oral and Written Communication were associated with significantly higher LC scores than respondents in the other disciplines. As the value of *p* was less than .01, this indicated the difference to be "highly significant" (Bluman, 2010, p. 419).

Table 10

Summary of Post Hoc Analyses of Data Collected for Research Question 4

	Humanities and Fine Arts compared to other disciplines	Life and Physical Sciences compared to other disciplines	Mathematics compared to other disciplines	Oral and Written Communication compared to other disciplines	Social and Behavioral Sciences compared to other disciplines
p value	.036*	.23*	.078*	.0025*	.032*

*α_B = .01

Summary

Descriptive analysis of data collected via the electronic survey instrument in this study revealed full-time general education faculty in Missouri community colleges to rate themselves at a high level of transitioning toward LC teaching methods. Further inferential analysis of the data indicated a faculty member's use of LC teaching methods significantly differed by the faculty member's type of training in pedagogy and academic discipline. In particular, faculty who received their training in pedagogy from PD provided outside their employer were associated with significantly higher LC scores. Faculty who taught in the field of Oral and Written Communication were also associated with significantly higher LC scores. Faculty members who received their training in pedagogy from employer-provided PD were associated with significantly lower LC scores. These same analyses noted a faculty member's use of LC teaching methods did not significantly differ by the faculty member's amount of training in pedagogy or years of teaching experience.

In Chapter Five, the researcher forms conclusions based on the data from this survey, with support from relevant related literature. Chapter Five discusses the implications of this research in pragmatic terms, proffering feasible suggestions for any institutions that wish to increase faculty use of LC teaching methods. This final chapter

includes recommendations for future research in the area of LC teaching methods. Specifically, these recommendations are focused on modifications which could be made to the design and implementation of research study.

Chapter Five: Summary and Conclusions

The term LC stands in contrast to the term TC, as way of denoting the fundamental paradigm shift called for in LC teaching. In a traditional TC classroom the role of the educator is to be a provider of knowledge (Blumberg, 2009). In an LC classroom the role of the educator is to be a facilitator of learning (Weimer, 2013). Learner-Centered teaching focuses on moving away from an information delivery model of education to a learning experience model of education (Doyle, 2011). It does not prescribe a fixed series of actions or teaching strategies for an instructor, rather it stipulates only a specific mindset be used in the decision making process of the educator (Blumberg, 2009).

The psychological and biological theories upon which LC teaching are based have been recognized as best-practices for facilitating learning by the APA, the AACU, the AERA, the NSF, the NRC, and the U.S. Armed Forces (Henson, 2003; McCombs & Miller, 2007). Quantitative measures of the positive impacts of LC teaching practices on student learning outcomes have been well documented in the literature (Armbruster et al., 2009; Avard, 2009; Boretz, 2012; Derting & Ebert-May, 2010; Gauci et al., 2009; Kahl & Venette, 2010; Kozar & Marcketti, 2008; Luckie et al., 2012; Pucha & Utschig, 2012; Salinas et al., 2008; Vande Broek et al., 2011; J. D. Walker et al., 2008; Yadav et al., 2011). Qualitative studies on the impacts of LC teaching have noted increased motivation and feelings of self-efficacy in both students and instructors (Ahn & Class, 2011; Annerstedt et al., 2010; Armbruster et al., 2009; Boretz, 2012; Durso, 2011; Hains & Smith, 2012; Kennedy, 2009; Lewis et al., 2010; Luckie et al., 2012; Marcketti, 2011; Pucha & Utschig, 2012; Salter et al., 2009; Schiller, 2009; Shibley et al., 2008; Tamim et al., 2008; Tyma, 2009; C. Walker, 2009; Wang et al., 2010; Wohlfarth et al., 2008). This

has led many institutions of higher education, including several Missouri community colleges, to identify themselves as LC organizations through the use of the term in institutional mission statements and strategic goals and/or advertising materials (DeVries, 2002; Evelyn, 2001; Matthews, 2003).

However, no standardized metric for supporting such claims is currently in widespread use. This is potentially problematic in the current age of accountability in which an institution is expected, through its research department, to provide numeric data to support any claims it makes about its practices (21st-Century Commision on the Future of Community Colleges, 2012; Hains & Smith, 2012). In fact, the accrediting body for Missouri community colleges, the HLC, requires such quantitative metrics be systematically collected, analyzed, and used in an institutions' decision making processes (HLC, 2012; NCES, 2013). Additionally, no data exists regarding how the demographics of faculty employing LC teaching methods at community colleges differ, if at all, from those of faculty employing TC teaching methods. This could impair institutions' efforts at increasing the use of LC practices. According to Doyle (2011), if an institution wished to invest time and/or dollars in increasing the use of LC teaching methods by its faculty, its efforts would be little more than trial and error without evidence on how to best direct those efforts. This study was designed to address these deficiencies.

This chapter will first review the major elements of the study. Then, a summary of the findings, as detailed in Chapter Four, is presented. A discussion of the conclusions that can be drawn from these findings, with support from related literature, follows. The remainder of the chapter is dedicated to providing practical suggestions for addressing the

issues which were raised in the research and making recommendations for any future research grounded on this study.

Review of the Study

In keeping with recent calls for greater amounts of quantitative research on teaching and learning (Doyle, 2011; Weimer, 2006), this study employed a quantitative methodology. Specifically, this study was causal-comparative in design. This choice was appropriate due the categorical nature of the data being collected (Cohen, 2001). The researcher's inability to directly manipulate the variables under study also made the causal-comparative design most appropriate (Bluman, 2010; Johnson, 2001).

Full-time general education faculty members currently teaching at Missouri community colleges were the target population for this study. Recent research on this population indicated the population size to be approximately 800 (O'Connor, 2013). As detailed in Chapter Four, unanticipated factors prevented the recruitment of approximately 346 individuals, reducing the population size to approximately 454 potential respondents (NCES, 2013). Upon initial analysis of the155 responses received, responses from 49 respondents were removed due to the respondent's failure to provide informed consent, to fall within the sample parameters, and/or to answer at least one of the questions from the second grouping of questions. This resulted in a functional sample size of 106 respondents, which represented a 23.3% response rate.

The data collection tool utilized for this study was a self-administered electronic survey questionnaire created by and delivered to participants using software provided by SurveyMonkey. The survey consisted of three sets of questions, grouped by topic. The questions in the first group confirmed each respondent truly fell within the target

population. The second group consisted of 29 rating scale questions with weighted answer choices taken, with permission, from the rubrics created by Blumberg (2009) in her book, *Developing Learner Centered Teaching: A Practical Guide for Faculty*. These questions asked respondents to consider distinct aspects of his or her teaching methods. Answer choices for these questions were associated with a score from 1 – 4. These scores served to rate each respondent along a continuum of employing entirely TC methods to employing entirely LC methods. The final grouping of questions was developed by the researcher to create a profile of each respondent in terms of his or her amount and type of training in pedagogy, years of teaching experience, and academic discipline.

After obtaining IRB permission from Lindenwood University a semi-personalized email invitation containing the information prescribed in the Lindenwood IRB adult consent form, a request for respondent participation, and a hyperlink to the survey instrument was delivered to the publicly available institutional email account of all potential respondents. The survey was available for three weeks during the fall semester of 2013. At the conclusion of the three weeks, raw data from the electronic survey was analyzed using both descriptive and inferential statistical techniques, as appropriate for each research question.

Findings

The first research question, (*Based on Blumberg's scale, how do full-time general education faculty at Missouri community colleges rate in regards to the use of LC teaching methods?),* was investigated by obtaining the descriptive statistics and measures of central tendency for the overall LC score for each respondent. Only 20.75% of respondents rated their teaching methods as being entirely LC. A combined total of

79.24% of the respondents rated their teaching methods as transitioning toward LC. Respondents, on average, rated themselves as being at a "high level of transitioning to LC approaches" (Blumberg & Pontiggia, 2011, p. 192), with a mean LC score of 3.14. No respondents reported using entirely TC teaching methods.

The second research question, (*Based on Blumberg's scale, does a full-time general education faculty member's use of LC teaching methods significantly differ by the faculty member's amount and type of training in pedagogy?),* was examined using an ANOVA to compare the average LC scores of respondents grouped by their reported amount and type of training in pedagogy. This analysis did not find any statistically significant difference in the use of LC methods among the groups with α set at 0.05. However, the value of *p*, .19, implied a "practical significance" (Bluman, 2010, p. 419), which led to further examination of the data. At this point, the data were re-grouped by only the respondents' amount of training in pedagogy or the respondents' type of training in pedagogy. The ANOVA of the data re-grouped by only respondents' reported amount of training in pedagogy still yielded no significant differences in use of LC methods at an α of .05. However, ANOVA of the data re-grouped by only respondents' reported type of training in pedagogy, did yield a significant difference in use of LC methods at an α of .05. Post hoc *t*-tests performed to identify where the difference between groups existed revealed respondents who reported receiving their training in pedagogy from employer-provided PD were associated with significantly less LC teaching methods than other respondents. Respondents who reported receiving their training in pedagogy from PD obtained outside their employer were associated with significantly more LC teaching methods than other respondents.

The third research question, (*Based on Blumberg's scale, does a full-time general education faculty member's use of LC teaching methods significantly differ by the faculty member's years of teaching experience?),* was examined using an ANOVA to compare the average LC scores of respondents grouped by their reported years of teaching experience. This analysis did not find any statistically significant difference in the use of LC methods among the groups with α set at .05. A secondary analysis of the data was performed in order to avoid a possible type II error due to the small frequency of responses in two of the original groupings. Once again, this analysis did not yield significant findings with α set at .05.

The fourth research question, (*Based on Blumberg's scale, does a full-time general education faculty member's use of LC teaching methods significantly differ by the faculty member's academic discipline?),* was examined using an ANOVA to compare the average LC scores of respondents grouped by their reported academic discipline. This analysis did find a statistically significant difference in the use of LC methods among the groups with α set at .05. Again, post hoc *t*-tests were performed to identify where the difference between groups existed. The analysis of the *t*-tests revealed respondents who reported teaching in the field of Oral and Written Communication were associated with significantly more LC teaching methods than respondents in the other academic disciplines included in the study.

Conclusions

As discussed in Chapter Three, results from this study could be considered to be reliable and have high external and construct validity (Fraenkel et al., 2011; Seltman, 2013; Webb et al., 2006). Overall, the causal-comparative quantitative methodology

employed in this study dictated the findings, and conclusions could be used only to draw associations between the variables under study (Fraenkel et al., 2011). No correlations could be drawn, nor could any predictions be made on the basis of these data (Seltman, 2013). These findings should be considered no more than a "snapshot" (Blumberg & Pontiggia, 2011, p.189) of the sample of full-time general education faculty who chose to respond to the survey. Despite these considerations, however, several meaningful conclusions can be drawn from the findings of this study.

The outcomes for research question one, for example, were surprising in light of the predictions from the review of literature. Most experts and researchers had characterized higher education as TC, rather than LC (Barr & Tagg, 1995; Blumberg, 2009; Doyle, 2011; Freire, 1970; Hains & Smith, 2012; Weimer, 2013). Indeed, a study by Blumberg and Pontiggia (2011), which employed nearly the same methodology and design as this study, found the majority of classes in higher education rated at a low-level of transitioning to LC methods, with only one class which rated at a high-level of transitioning to LC methods, and no classes which rated as entirely LC.

As discussed in the limitations presented in Chapter One, the unexpected findings from research question one could have been attributed to a combination of position bias (Iarossi, 2008) and satisficing (Barge & Gehlbach, 2011). Respondents may have begun to tire of the survey process and simply started choosing the response category they knew to be the preferred option. However, an analysis of the trend line from a scatterplot of the average responses for each question did not reveal this to be the case. The average response for each question trended downward, or toward less use of LC teaching methods, toward the end of the survey (see Figure 1). Furthermore, comparison by *t*-test

revealed no statistically significant difference between the average LC score for respondents who completed the entire survey and the average LC score for respondents who did not respond to all 29 questions regarding their teaching methods, $p = .157$ and $\alpha = .05$.

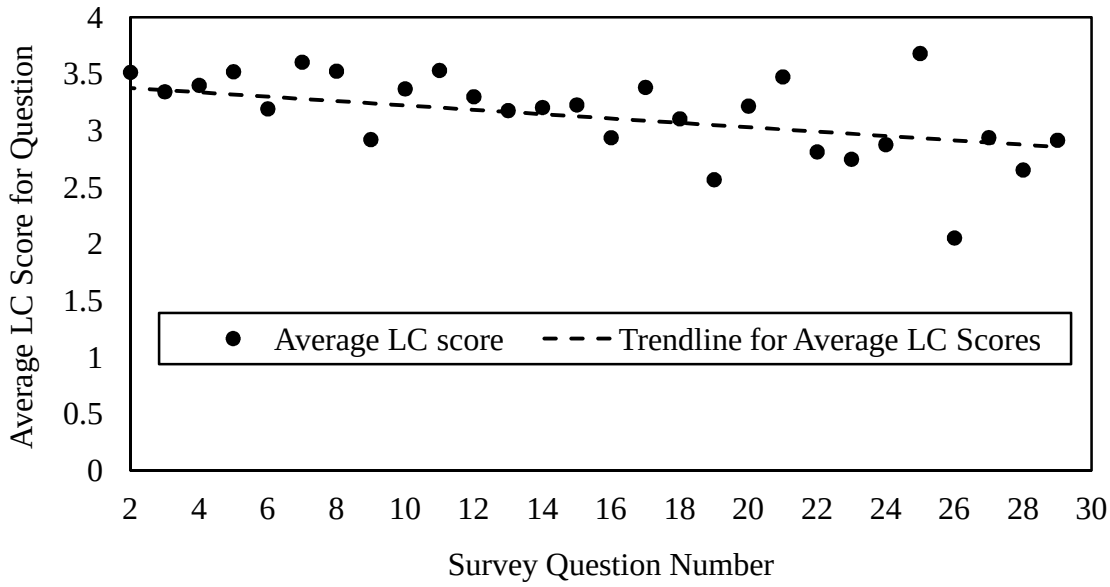

Figure 1. Scatterplot of average LC Score by survey question. Solid dots represent average of all responses for each survey question. Dashed line represents trend line for data, the equation for which is y=-0.0193x + 3.4138.

Another possible explanation for the unexpected results for research question one could be that only community college faculty were surveyed. As noted in Chapter Two, many researchers have credited the successes of community colleges directly to the unique attributes of community college faculty (Berry et al., 2001; Boggs, 2010). The review of literature revealed that the founding core of community college faculty had either a strong desire to teach, rather than research, or a strong pedagogical background in

what today would be deemed LC practices (Lail, 2009). As 34% of this survey's responses came from respondents employed at an institution which was established less than 25 years ago (MCCA, n.d.), and 41.24% of survey respondents reported having 15+ years of teaching experience, this survey likely represented such a founding core. This offers a possible explanation for the greater than expected used of LC teaching methods.

It was the expectation of the researcher, based on the review of literature, that faculty who rated themselves as having a great deal of training in pedagogy, specifically training obtained through coursework for a degree, would rank highest in the use of LC teaching methods (Evelyn, 2001; Lail, 2009). However, responses collected for research question two did not support this hypothesis. No significant difference in the use of LC teaching methods among groups of respondents with differing amounts and types of training in pedagogy was found. Rather than assuming these findings were a unique contradiction to the body of literature, the researcher suspects the formatting of the answer choices for this particular survey question may have masked the true nature of the findings for this research question.

As respondents were limited to only one answer choice for the question, each respondent had to make an estimation regarding his or her amount of training and the source from which the majority of that training had come. Several respondents questioned the validity of the answer choices in their free response comments, asking for clarification of the terms *a little, a moderate amount,* and *a great deal*. Other respondents chose not to answer this question at all, declaring they had received training in pedagogy from more than one source in equal amounts. Unintentionally, the researcher had caused respondent confusion by constructing a question without "mutually

exclusive and collectively exhaustive" (Iarossi, 2008, p. 42) answer alternatives. This may have negatively affected the validity of these particular data (Seltman, 2013).

Nonetheless, analysis of findings from research question two does allow for at least one meaningful conclusion to be drawn. It would be appropriate to say, in terms of PD on pedagogy, it is the source, not the quantity which is most impactful to faculty members' teaching methods. This supports the findings of many studies in the field of effective PD in higher education, which call for discipline-specific PD from content experts with classroom experience rather than generic college-wide PD (N. Brown et al., 2010; Weller, 2011). The authors of these studies asserted that as PD opportunities provided by an employer can be seen as a more convenient option, it can be assumed faculty who decline this option and seek out their own PD find the practice to be more meaningful and are therefore more likely to incorporate information gleaned from these sessions into their teaching methods (Wood et al., 2011).

The lack of significant differences observed in the data gathered for research question three could be extrapolated to lead to a thought-provoking conclusion; teaching experience does not affect quality of teaching. This study's finding calls into question the common practice in community colleges of including some teaching experience as a mandatory requirement for hiring of new faculty (Jenkins, 2011). Data from this study suggest that by eliminating applicants with no teaching experience, a community college may, in fact, be missing the opportunity to hire the most LC candidate. Perhaps findings such as this explain why the HLC's (2005) guidelines on determining qualified faculty make no mention of teaching experience as a suggested hiring criterion.

The findings from research question four identify faculty in the field of Oral and Written Communication as associated with the use of the most LC teaching methods. This might be a reflection of the framework the state of Missouri uses to define and describe a general education curriculum. The MDHE (2005) defines a general education as consisting of coursework in both skill and knowledge areas. The skill areas describe subjective competencies that students should be able to demonstrate, such as "the ability to recognize conflicts within and between value systems" (MDHE, 2005, p. 6). The knowledge areas, conversely, delineate more objective competencies such as "the ability to describe the basic principles of the physical universe" (MDHE, 2005, p. 7). Of note is the specific terminology used by the MDHE in defining the goals of these two areas; skill areas should "develop students' abilities" (MDHE, 2005, p. 6), while knowledge areas should "develop students' understanding" (MDHE, 2005, p. 6).

The knowledge areas align in a straightforward manner with commonly recognized academic disciplines such as Mathematics and Social Sciences. But, how a particular academic discipline is identified in terms of the skill areas it addressed is a decision left up to each institution. Notably, there is one area of clear intersection between these skill and knowledge areas, and it lies in the area of Communication. Faculty working in the field of Communication are the only instructors explicitly required, by state guidelines, to develop both a student's abilities and a student's understanding in his or her content area. This may explain why faculty in this area were found to report themselves more LC, as LC teaching methods focus on what students can do, not what teachers teach (Blumberg, 2009).

Indeed, examination of free responses to several of the questions based on Blumberg's rubrics revealed faculty in the areas of Mathematics and Life and Physical Sciences felt attributes of the content in their discipline imposed constraints on their teaching methods and thus, prevented them from answering the questions being posed. This was specifically observed in responses to the questions about students' ability to justify accuracy of their answers, the use of authentic assessments, use of open-ended assignments, and use of expression of alternative perspectives by students. Free responses ranged from a simple, *not applicable*, to a justification that *in the field of mathematics there is only one right answer*. A few respondents went so far as to note that, in their estimation, their course content was *not useful in the real world*. From these observations one could hypothesize these faculty viewed their discipline as an objective and esoteric body of knowledge, rather than a subjective and practical skill set. This would correlate with the observed low levels of LC teaching in use in these academic disciplines.

Implications for Practice

Teaching and learning in institutions of higher education in the United States have evolved from a tradition which places the utmost value on instructor knowledge (Barr & Tagg, 1995). The notion that university faculty need only be content experts was made common practice in the first institutions of higher education in the 1600s and persists though to the current day (Arendale, 2010a). Most modern universities and colleges continue to draw a clear distinction in title between those employees responsible for providing academic content and those employees responsible for nurturing student learning (Arendale, 2010b). However, if institutions of higher education hold LC

teaching as an ideal, then faculty must be experts in both discipline-specific content and pedagogy (Blumberg, 2009; Weimer, 2013). In order to achieve this ideal, institutions of higher education would be best served by, according to the findings and conclusions of this study, initiating changes to their PD strategies, curriculum, and hiring policies.

The findings from this study support the suggestion made by Battistella (2007) that PD funding be decentralized or privatized. This researcher suggested the monies currently spent on employer-provided PD sessions would be more effectively spent were they issued as vouchers to be used by faculty in obtaining PD of their own choosing. Professional development sought out by a faculty member, rather than imposed upon him or her, has been found to be most impactful on that faculty member's teaching methods (Petrides, Middleton-Detzner, Jimes, Hedgspeth, & Rubio, 2011). If this type of policy change is not feasible an institution should, at a minimum, conduct a careful review of its in-house PD practices. A national review of PD practices in community colleges revealed successful programs included both a clear alignment between PD activities and institutional goals, and considerable faculty participation in design and implementation (Murray, 1999). Any measures taken to empower a faculty member to make his or her own selection in timing and topic of PD should increase the likelihood the PD impacts the teaching methods of that faculty member (Gunersel, Barnett, & Etienne, 2013).

In terms of its curriculum, an institution should consider a careful analysis and possible revision of the objectives of any courses which currently specify only content-based competencies. As was found in this study, it is likely faculty who feel their only task is to provide students with facts feel unable to employ an entirely LC teaching method (Blumberg, 2009; Weimer, 2013). A series of collaborative, faculty-led,

departmental meetings in which the most appropriate skill areas for each course are identified and incorporated into the course's curriculum would ensure faculty focus on both student ability and student understanding in the courses they teach. For faculty reluctant to relate their field with skill areas, faculty already found to use LC methods, such as those in the fields of Oral and Written Communication, could serve as mentors during the process (Petrides et al., 2011).

Finally, findings from this study would support the removal of the common requirement of having some prior teaching experience from hiring qualifications for new faculty. As noted previously, the results from this study indicated differing years of teaching experience were not associated with significant differences in the use of LC teaching methods. Should the use of LC teaching methods be desired, hiring committees should, at least in part, rely on teaching demonstrations as a measure of a candidates potential in the classroom. Prior research has indicated the majority of hiring committees in higher education use teaching demonstrations, and the committees have a high degree of confidence in the ability of a teaching demonstration to predict classroom performance of a candidate (Smith, Wenderoth, & Tyler, 2013). Establishment of common criteria, based on Blumberg's rubrics, for evaluating a candidate's teaching demonstration would ensure the candidate using the most LC teaching methods could be selected.

Recommendations for Future Research

As this study was the first of its kind, it was the intention of the researcher to provide a foundational base for both the design and implementation of future research in the use of LC teaching practices. This intention was supported by the high reliability and external validity of this study (Fraenkel et al., 2011). A summative and diagnostic

appraisal of the construction and execution of this study bared several areas in which this research could be altered were it to be conducted again. The next sections present a discussion of these possible modifications organized by area of impact.

Research design. The use of solely quantitative methodologies in this study precluded a thorough investigation and understanding of some aspects of the phenomenon under examination, such as the influence of culture, context, and values on a faculty member's teaching methods (Fraenkel et al., 2011). Consideration of the free response comments from this survey indicate participants were willing to provide self-reflective responses and those responses yielded valuable insights into the motivations of faculty in their choice of teaching methods. Future research based on this study could, therefore, benefit from a use of a mixed-methods approach (Creswell, 2013). Including interviews or focus groups would allow for some flexibility in data collection (Creswell, 2013; Fraenkel et al., 2011). It is possible an opportunity for understanding was missed in not having the ability to ask follow-up questions to respondents who reported the majority of their training in pedagogy had come from PD provided outside their employer. A deeper understanding would have come from asking these respondents what topics these PD sessions covered and to inquire as to their motivations for seeking those opportunities.

Future researchers may wish to consider analysis of additional evidences of a faculty member's teaching methods. In the Blumberg and Pontiggia (2011) study, for example, printed course materials, such a syllabi, were used as data in calculating the LC score for a course. Alternate sources of evidences of a faculty member's teaching methods, such as classroom observations or analysis of student satisfaction survey

results, could be explored as well. Inclusion of these types of data would yield a more holistic picture of the type of teaching occurring in the classrooms under study. Future research based on this study could also calculate a series of LC scores for individual faculty members using these different data sets, and look for any correlations among or significant differences between those scores.

The size and composition of the population of the study could be modified in future research. A suggestion would be to include different geographic regions and/or faculty employed at other post-secondary institutions such as four-year universities or private colleges. Differences in culture and traditions in these areas and institutions may yield different findings regarding teaching styles of faculty employed at those institutions. Future researchers may also wish to broaden the parameters of this population by including part-time faculty. Any of these measures would affect certain aspects of validity, namely by decreasing the likelihood of making a type II error and the increasing the generalizability of the study (Seltman, 2013).

Another possible modification would be to have faculty identify the method of delivery used in their instruction, i.e. online or face-to-face. The differences in the use of LC teaching methods between these modalities could then be analyzed. A future researcher wishing to make this modification should be aware that ample research has already been done on the topic of best-practices for online delivery of instruction. A review of empirical research on online learning performed by the U.S. Department of Education in 2010 found more than a thousand studies had been published between 1996 and 2008 (U.S. Department of Education, 2010). A meta-analysis of these findings revealed the elements found to be most effective in online courses align precisely with

the tenets of LC teaching (Blumberg, 2009; U.S. Department of Education, 2010). Thus, implementation of a study similar in methodology to this study could yield valuable data for a researcher wishing to benchmark the use of best-practices in online instruction.

The most problematic aspect of data collection for this study was gaining access to potential participants. To address this concern, future researchers may wish to consider attempting to acquire an internal email distribution list from each of the institutions under study. This would preclude omission of any potential respondents but, would also compel the researcher to obtain IRB permission from each of the individual institutions. A search for the term IRB on the websites of the twelve Missouri community colleges, performed in January, 2014, revealed only five have an IRB committee in place. Furthermore, of those five, only two have publicly available procedures for filing an application with those IRB committees. It is possible obtaining IRB permission from these institutions would be time-consuming and might hinder timely data collection. A future researcher opting to use this approach should, therefore, allow sufficient time for this portion of the process.

This study utilized a strategy to increase the response rate which the researcher would suggest be preserved in future studies. Research suggested the inclusion of approval from the highest-ranking academic officer, or CAO, in the initial email invitation to potential participants should have increased the response rate (Fraenkel et al., 2011). Analysis of responses from this study supported this practice. The majority of responses, 49%, came from respondents employed at an institution whose CAO endorsed the study. It should be noted the response rate from CAOs to the request for endorsement was low. Only five of the 12 CAOs responded to the request for endorsement. Three

CAOs agreed to provide endorsement, while two CAOs declined to endorse the study without approval from their institution's IRB committee. The remaining seven CAOs did not respond to the request for endorsement. Implementation of a strategy to increase the number of endorsements from CAOs, therefore, would likely benefit a future researcher in terms of participant response rate.

Instrumentation. The most obvious area for amendment of the survey instrument was in the construction of the answer choices for the third grouping of questions, specifically, the question regarding the respondent's amount and type of training in pedagogy. In initial construction of the survey the researcher made every attempt to ensure the phrasing of this researcher-originated question was prudently devised to stand up to various criteria for best-practices in closed-ended question construction set forth in the literature (Fink, 2003; Fraenkel et al., 2011; Iarossi, 2008). Field test participants noted no uncertainty over the response choices for this question.

However, the necessity of re-grouping the responses in order to analyze the results, as documented in Chapter Four, combined with the confusion noted in the free response comments from study participants, leads the researcher to suggest this question be edited in future research endeavors. It would seem appropriate to disjoin the question into two separate inquiries, one regarding *amount* of training in pedagogy and one regarding *type* of training in pedagogy. Perhaps, the question regarding type of training in pedagogy could be presented as a ranking-type question, rather than in a multiple choice-type format. Field testing could be used to determine if this modification yielded less respondent confusion. It should be noted this modification would impact the type of data analysis that could be performed on these results.

As the length of the survey seems to have deterred completion for some respondents, the length of the survey instrument is another aspect of this study which could be reconsidered. In order to truncate the survey and potentially increase data quality and completion rates, a future researcher could perform a factor analysis on the responses from this survey (Garrett-Mayer, 2006). Factor analysis is a data reduction tool which "removes redundancy or duplication from a set of correlated variables" (Garrett-Mayer, 2006, p. 4). Using factor analysis would allow a researcher to identify which of the 29 questions taken from Blumberg's (2009) rubrics were most indicative of the respondents overall LC score and reduce the length of the survey to a more manageable size. Any future researchers making this type of modification would, of course, need to seek permission from Dr. Blumberg.

Data collection. Future researchers may wish to adhere to a different timeline for data collection. Adoption of the three week time frame for data collection for this study was supported by an analysis conducted by SurveyMonkey which established that, no matter the sample size, 80% of total responses ultimately collected for any given survey are collected within the first seven days after launch (SurveyMonkey, 2011). The same analysis ascertained 11% more and 4% more responses are collected in the second and third week, respectively (SurveyMonkey, 2011). However, analysis of the timing of responses to this survey instrument showed a markedly different pattern. Of the total responses collected, only 40% were collected in the first seven days after launch of the survey. The second and third weeks yielded response rates of 29% and 30%, respectively. These figures lead the researcher to hypothesize more responses may have been gathered had the survey been left open for a longer period of time. A future

researcher may wish to consider making the survey available for more than three weeks, or during a different semester.

Summary

As noted in the discussion of the conceptual framework in Chapter One, this study's overarching purpose was to provide institutions of higher education with a pragmatic means to increase the use of educational best practices that best support students as learners. In a review of the literature conducted to identify such practices, the bulk of the research indicated factors associated with teacher quality had the greatest bearing on student learning outcomes (Blumberg, 2009; Farnsworth, 2010; Hattie, 2009; McCombs & Miller, 2007; Wayne & Youngs, 2003; Weisberg et al., 2009). Review of research on various approaches to teaching revealed LC teaching methods to have had the greatest positive impacts on student learning (Blumberg, 2009; Doyle, 2011; Hains & Smith, 2012; McCombs & Miller, 2007; Salinas et al., 2008; Wang et al., 2010; Wright, 2011). Thus, this study focused on providing institutions with a way of ascertaining the teaching methods currently in use by its faculty, and on identifying which teacher traits were associated with the use of LC teaching methods.

This study used Blumberg's (2009) rubrics to rate the use of LC teaching methods by full-time general education faculty at Missouri community colleges. The data collected revealed respondents rated themselves at a high level of transitioning toward LC teaching methods. The study also looked for significant differences between a full-time general education faculty member's use of LC teaching methods and the faculty member's amount and type of training in pedagogy, years of teaching experience, and academic discipline. The data collected revealed respondents who reported receiving

training in pedagogy from PD provided outside their employer and faculty in the field of Oral and Written Communication were associated with significantly more LC teaching methods. Respondents who reported receiving their training in pedagogy from employer-provided PD were found to be associated with significantly less LC teaching methods. Notably, no significant difference in the use of LC teaching methods was found among respondents with differing years of teaching experience.

These findings led the researcher to conclude that changes to PD strategies, curriculum, and hiring policies may be the most effective should an institution wish to increase the use of LC practices by its faculty. Specifically, administrators at these institutions should consider either mandating faculty attend PD outside the institution, or initiating a focused renovation of existing PD programs. A purposeful update of course objectives to ensure a focus on both skill and knowledge competencies are in place should also be considered. In terms of hiring new faculty, Human Resource directors should consider removing the requirement of prior teaching experience for new faculty and/or adopting a rubric to be used in the evaluation of teaching demonstrations which would identify the most LC candidates.

As noted in the discussion of the future of community colleges and LC teaching in Chapter Two, a focus on increasing the use of LC teaching practices in community colleges will be paramount in the upcoming years. Numerous entities, both public and private, are calling on community colleges to "change their institutional characteristics… *from* a focus on teaching *to* a focus on learning" (21st-Century Commision on the Future of Community Colleges, 2012, p. *x*) in order to serve as the primary means to "provide Americans of all ages a chance to learn the skills and knowledge necessary to compete

for the jobs of the future" (The White House Office of Press Secretary, 2009, p. 1). These skills and knowledge are typically identified by experts as process-oriented, rather than product-oriented outcomes (21st-Century Commision on the Future of Community Colleges, 2012; Alliance for Excellent Education, 2012; National Leadership Council for liberal education and America's promise, 2007). A resolute commitment to implement measures intended to increase the use of LC teaching methods is the best strategy a community college can adopt in order to provide students with an educational experience that successfully integrates knowledge and application of that knowledge.

Appendix A

Blumberg's Rubrics and Permission

It sounds like a very important and appropriate study. You certainly have my permission to use our methodology. I am attaching my scoring sheet which provides further information to score instructors on each rubric category. I hope this is helpful to you. I would be interested in how you use it and if you make nay modifications to the scoring sheet.

I would be happy to work with you as progress through your dissertation in any way I can. Please keep me informed. Good luck!

Peace,
Phyllis

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Dr. Blumberg's Rubrics can be acessed at: http://www.usciences.edu/teaching/Learner-Centered/rubrics.pdf

Appendix B:

Electronic Survey Instrument

This survey is part of research being conducted through Lindenwood University by Vivian Elder under the guidance of Dr. Sherry DeVore. The purpose of this study, entitled, *Benchmarking the Use of Learner-Centered Teaching Practices in Missouri Community Colleges,* is to examine teaching practices used by full-time Gen Ed faculty at Missouri Community Colleges.

Your participation in this research will involve completion of an online survey that will take approximately 30 minutes.

All community college faculty who currently teach General Education courses at a community college in Missouri are being invited to participate in this research (this is approximately 800 potential participants).

There are no anticipated risks or benefits associated with participation in this research. Your participation is voluntary and you may choose not to participate in this research study or withdraw your consent at any time. You will NOT be penalized in any way should you choose not to participate or withdraw.

We will do everything we can to protect your privacy should you choose to participate in this study. As a part of this effort, your identity will not be revealed in any publication or presentation that may result from this study. A summary report of responses for a given institution may be provided to the chief academic officer of your institution, but all identifying information will be removed prior to presentation. Otherwise, the information collected for the purposes of this study will remain in the possession of the investigator in a safe location.

If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Vivian Elder [redacted] or the Supervising Faculty, Dr. Sherry DeVore (417-881-0009). You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs at 636-949-4846.

By proceeding to the next page of this survey you are giving your informed consent to participate in the research described above. After you have completed the survey, a thank you email with a copy of your informed consent will be emailed to you.

Thank you in advance for your time and assistance!

Vivian Elder
viviankelder@gmail.com

1. Are you currently employed as a full-time faculty member whose primary teaching assignment falls within General Education (Oral and Written Communication, Humanities and Fine Arts, Mathematics, Life and Physical Sciences, or Behavioral and Social Sciences?)

- ○ Yes
- ○ No
- ○ Other (please describe)

2. Which best describes your use of course content? Please choose ALL that apply.

- ☐ I use content that helps students build a knowledge base.
- ☐ I use content to help students recognize why they need to learn the content.
- ☐ I use content to help students apply content to solve problems, with my assistance.
- ☐ I use content to help students identify why they need to learn content.
- ☐ I use content to help students use discipline-specific learning methodologies, with my assistance.
- ☐ I use content to help students use inquiry or ways of thinking in the discipline, with my assistance.
- ☐ I use content to help students learn to apply content to solve real world problems, with my assistance.
- ☐ I use content to help students evaluate why they need to learn content.
- ☐ I use content to help students acquire discipline-specific learning methodologies.
- ☐ I use content to help students practice using inquiry or ways of thinking in the discipline.
- ☐ I use content to help students learn to solve real-world problems.

Other (please describe your use of content)

3. Consider the level to which students engage in a meaningful way with the content in your course.

	I allow students to memorize content without it being meaningful.	I provide content so students can learn material as it is given to them without transforming or reflecting on it.	I assist students to transform and reflect on some of the content to make their own meaning out of some of it.	I encourage students to transform and reflect on most of the content to make their own meaning out of it. Additionally, students must do something integrative outside of class, using material from class in a large assignment, not just a small homework assignment.
Which best describes your students' level of engagement in content?	○	○	○	○

Other (please describe your students' level of engagement in content)

4. Consider the use of organizing schemes, or central themes, in your course.
***an organizing scheme is not a grading scheme, examples of organizing schemes would be homeostasis in Biology, and modernity in History**

	Students learn content without a clearly defined organizing scheme provided by me.	I provide limited organizing assistance.	I provide some organizing schemes to help students learn content and these schemes are referred to explicitly in the course activities.	I provide and USE organizing schemes to help students learn content and these schemes are referred to explicitly in the course activities.
Which best describes your use of organizing schemes?	○	○	○	○

Other (please describe your use of organizing schemes)

5. Consider the use of content to facilitate future learning in your course.

	I provide content so students can learn it in isolation without providing opportunities for them to apply knowledge to new content.	I provide students with limited opportunities to apply knowledge to new content.	I frame content so students can see how it can be applied in the future.	I frame and organize content so students can learn additional content that is not taught.
Which best describes your use of content to facilitate future learning in your course?	○	○	○	○

Other (please describe your use of content to facilitate future learning in your course)

6. Consider your role in creating an environment for learning in your course.

	I use the same approach or approaches throughout the course even if the students are not learning.	I do not focus on creating a learning environment, but students do learn.	I create a learning environment through the use of organization OR use of material that accommodates different learning styles.	I create a learning environment through the use of organization AND use of material that accommodates different learning styles.
Which best describes your approach to creating an environment for learning?	○	○	○	○

Other (please describe your approach to creating an environment for learning)

7. Consider the alignment of your course objectives, teaching/learning methods, and assessment methods. Is the level (for example: analysis from Bloom's taxonomy) for a given course objective the same as the teaching/learning method and assessment method used for that objective? Which best describes the alignment of these three essential course aspects in your course?

	I have not aligned the objectives, teaching/learning methods, and assessment methods in my course.	I minimally align the objectives, teaching/learning methods, and assessment methods in my course.	I have aligned at least two of the three essential aspects of my course (objectives, teaching/learning methods, and assessment methods) in my course	I somewhat align the objectives, teaching or learning methods, and assessment methods in my course.	I explicitly, coherently, and consistently align objectives, teaching/learning methods, and assessment methods in my course.
Which best describes the alignment of these three essential course aspects in your course?	○	○	○	○	○

Other (please describe the alignment of the course objectives, teaching/learning methods, and assessment methods in your course)

8. Consider the student learning goals and the teaching/learning methods you use in your course.

	I do not have specified student learning goals for my course.	I do not use active learning activities in my course.	I use teaching/learning methods without regard for student learning goals.	I use teaching/learning methods that are in conflict with student learning goals.	I use some teaching or learning methods that are appropriate for student learning goals.	I intentionally use various teaching or learning methods that are appropriate for student learning goals.
Which best describes the relationship between these two?	○	○	○	○	○	○

Other (please describe the relationship between the student learning goals and the teaching/learning methods you use in your course)

9. Consider the activities involving student, instructor, and content interaction in your course.

	I use no activities in which students actively interact with the material, me, or each other.	I use a few activities in which students actively interact with the material, me, OR each other.	I use some activities in which students actively interact with the material, me, OR each other.	There are some three-way (student, instructor, content) interactions in my course. I routinely use activities in which students actively interact with the material, me, AND each other.	I routinely use activities in which students actively interact with material, and me, and each other.
Which of the following best describes these activities in your course?	○	○	○	○	○

Other (please describe the activities involving student, instructor, an content interaction in your course)

10. Consider the objectives in your course. Are they SMART objectives (specific, measurable, attainable, relevant, and time-oriented)?

	I do not provide course objectives in my syllabus.	I provide couse objectives, but they are vague (no SMART characteristics).).	I provide course objectives in my syllabus that have some, but not all, of the 5 SMART characteristics.	I provide SMART course objectives in my syllabus, but do not refer to them throughout my course.	I provide SMART course objectives in my syllabus, and refer to them throughout the course.
Which of the following best describes your course objectives?	○	○	○	○	○

Other (please describe the objectives in your course)

11. Consider the motivation of your students to learn (intrinsic drive to learn versus extrinsic reasons to earn grades).

	I extensively use extrinsic motivators to get students to earn grades.	I provide limited opportunities for students to become intrinsically motivated to learn, but use extrinsic motivators to get students to earn grades.	I provide some opportunities for students to become intrinsically motivated to learn.	I inspire and encourage students to become intrinsically motivated to learn.
Which of the following best describes the motivation of your students?	○	○	○	○

Other (please describe the motivation of your students).

12. Consider the responsibility for learning in your course.

	I assume all responsibility for student learning by providing content to memorize, not requiring students to create their own meaning of content, and telling students exactly what will be on examinations.	I assume most of the responsibility for student learning by providing detailed notes of the content to be learned and reviewing content to be examined while helping students learn the material and meet the objectives.	I provide some opportunities for students to assume responsibility for their own learning.	I provide increasing opportunities for students to assume responsibility for their own learning, leading to achievement of stated learning objectives.
Which of the following best describes the responsibility for learning in your course?	○	○	○	○

Other (please describe the responsibility for learning in your course).

13. Consider the learning of learning skills such as time management, self-monitoring, goal setting, independent reading, and/or original research in your course.

	I allow students to meet course objectives without developing further learning skills.	I direct students to develop a few skills for further learning.	I direct students to develop some skills for further learning.	I facilitate students to develop various and appropriate skills for further learning
Which best describes the learning of learning skills in your course?	○	○	○	○

Other (please describe the learning of learning skills in your course).

14. Consider the use of self-directed lifelong learning skills, such as determining a personal need to know more, knowing who to ask or where to seek information, determining when need is met, and/or development of self-awareness of students' own learning abilities in your course.

	I do not consider self-directed learning skills or self-awareness of students' learning abilities relevant.	I do not assist students to become self-directed, lifelong learners or aware or their own learning and abilities to learn.	I assist student to become self-directed, lifelong learners in a few areas and somewhat aware of their own learning and abilities to learn.	I facilitate students to become proficient, self-directed, lifelong learners and fully aware of their own learning and abilities to learn.
Which best describes the use of self-directed lifelong learning skills in your course?	○	○	○	○

Other (please describe the use of self-directed lifelong learning skills in your course).

15. Consider the use of students' self-assessment of their learning in your course

	I believe that instructors alone asses student learning	I do not consider self-assessment of learning to be relevant.	I do not direct students to assess their own learning.	I sometimes provide direction to help students assess their own learning.	I motivate students to routinely and appropriately assess their own learning.
Which of the following best describes the use of students' self-assessment of their own learning in your course?	○	○	○	○	○

Other (please specify)

16. Consider the use of students' self-assessment of their strengths and weaknesses in your course.

	I believe that only instructors should assess students' strengths and weaknesses.	I do not direct students to practice self-assessments.	I help students practice some self-assessment skills.	I encourage students to become proficient at self-assessment.
Which of the following best describes the use of students' self-assessment of their strengths and weaknesses in your course?	○	○	○	○

Other (pleasedescribe the use of students' self-assessment of their strengths and weaknesses in your course).

17. Consider the use of information literacy skills, such as framing questions, accessing sources, evaluating sources, evaluating content, and using information legally in your course.

	I do not help students acquire any information literacy skills.	I help students acquire two of the five information literacy skills listed above.	I help students acquire four of the five information literacy skills listed above.	I facilitate students to become proficient in all five information literacy skills listed above.
Which of the following best describes the use of information literacy skills in your course?	○	○	○	○

Other (please describe the use of information literacy skills in your course).

18. Consider the amount of integration between learning and assessment in your course.

	I see assessment as less important than teaching and do not integrate assessment within the learning process.	I minimally integrate assessment within the learning process (for example by going over answers to exams).	I somewhat integrate assessment within the learning process (for example, assessment takes place during teaching/learning time not just as a separate event).	I mostly integrate assessment within the learning process (for example, assessment occurs continually within the learning process through formal and informal assessments)
Which of the following best describes the use of assessment within the learning process in your course?	○	○	○	○

Other (please describe the use of assessment within the learning process in your course).

19. Consider the use of formative assessment (assessment during the learning process), such as using clickers to give immediate feedback to students or providing correct answers to online quizzes, in your course.

	I use only summative (assessment after the learning process) assessment and provide students with no constructive feedback.	I use a little formative assessment and/or provide students with limited constructive feedback.	I give students some formative assessment and constructive feedback following assessments.	I consistently integrate formative assessment and constructive feedback into the learning process.
Which of the following best describes the use of formative assessment in your course?	○	○	○	○

Other (please describe the use of formative assessment in your course).

20. Consider the use of peer and self assessment in your course.

	I do not consider peer and self assessment relevant and/or do not factor these assessments into the students' final grades.	I rarely require students to use peer and self assessments.	I require students to use some peer and self assessments that count toward the students' final grade.	I routinely encourage students to use peer and self assessments that count toward the students' final grade.
Which of the following best describes the use of peer and self assessment in your course?	○	○	○	○

Other (please describe the use of peer and self assessment in your course).

21. Consider the opportunity students in your course have to demonstrate mastery and ability to learn from mistakes

	I do not provide any opportunities for students to demonstrate that they have learned from mistakes and then show mastery.	I provide a few opportunities for students to demonstrate that they have learned from mistakes (example, redo 1-2 assignments).	I provide some opportunities for students to demonstrate mastery after making mistakes (example, allow some practice through online quizzes, feedback on drafts).	I offer students many opportunities to learn from their mistakes and then demonstrate mastery (there is a consistent theme of learning from mistakes).
Which of the following best describes the opportunity students in your course have to demonstrate mastery and ability to learn from mistakes?	○	○	○	○

Other (please describe the opportunity students in your course have to demonstrate mastery and ability to learn from mistakes).

22. Consider the opportunity students in your course have to justify the accuracy of their answers.

	I determine the accuracy of answers and to not allow students to ask why they got answers wrong.	I infrequently allow students to ask why they got answers wrong.	I allow students to justify their answers when they do not agree with my answers.	I encourage students to justify their answers when they do not agree with my answers.
Which best describes the opportunity students in your course have to justify the accuracy of their answers?	○	○	○	○

Other (please describe the opportunity students in your course have to justify the accuracy of their answers).

23. Consider the timeframe for providing feedback to your students in your course.

	I do not provide a timeframe for feedback.	I do not return tests or grade assignments.	I provide a timeframe for feedback that does not take into account students' input and usually follow that timeframe.	I provide a timeframe for feedback that takes into account students' input and usually follow that timeline.	My students and I mutually agree on a timeframe for feedback and I always follow that timeline.
Which of the following best describes the timeframe in which students are provided feedback in your course?	○	○	○	○	○

Other (please describe the timeframe in which students are provided feedback in your course).

24. Consider the use of authentic assessments (having students do what practitioners/professionals in your field do) in your course.

	I rarely or never use authentic assessment.	I use a few authentic assessments during the course.	I use some authentic assessments or assessments that have authentic elements.	I use authentic assessment throughout the course.
Which of the following best describes the use of authentic assessment in your course?	○	○	○	○

Other (please describe the use of authentic assessment in your course)

25. Consider the determination of course content in your course.

	I entirely determine content and do not seek feedback on content.	I determine course content and allow students to offer insights/feedback on content after course is over.	I determine course content and allow students to choose some assignment topics (with permission).	I largely determine course content and encourage students to explore additional content independently or through a project.
Which of the following best describes the determination of course content in your course?	○	○	○	○

Other (please describe the determination of course content in your course)

26. Consider the use of expression of alternative perspectives by students in your course.

	I express all of the perspectives.	I infrequently allow students to express alternative perspectives, even when appropriate.	I ALLOW students to express alternative perspectives when appropriate.	I ENCOURAGE students to express alternative perspectives when appropriate.
Which of the following best describes the use of expression of alternative perspectives by students in your course?	○	○	○	○

Other (please describe the use of expression of alternative perspectives by students in your course)

27. Consider the determination of how students can earn grades in your course.

	All performance and assignments count toward students' grades.	I allow students to drop/replace one assessment but provide no alternative opportunities for them to demonstrate mastery.	I allow students to drop/replace some assessments and demonstrate mastery through other means	I use mastery (students may retake assessments until an acceptable performance/standard is reached), contract grading (students contract for their grade based upon how much acceptable work they will do), or equivalent methods to determine what grade students will earn.
Which of the following best describes the determination of how students can earn grades in your course?	○	○	○	○

Other (please describe the determination of how students can earn grades in your course)

28. Consider the use of open-ended assignments (assignments that are open-ended, allow alternative paths, or questions that allow for more than one right answer) in your course.

	Even when appropriate, I do not use open-ended assignments.	When appropriate, I use few open-ended assignments.	When appropriate, I sometimes use open-ended assignments.	When appropriate, I routinely use open-ended assignments.
Which of the following best describes the use of open-ended assignments in your course?	○	○	○	○

Other (please describe the use of open-ended assignments in your course)

29. Consider the flexibility of course policies, assessment methods, learning methods, and deadlines in your course.

	I mandate all course policies and deadlines.	I do not adhere to course policies.	I am flexible on a few course policies, assessment methods, learning methods, and deadlines, and infrequently adhere to these flexible decisions.	I am flexible on some course policies, assessment methods, learning methods, and deadlines, and I somewhat adhere to course policies.	I am flexible on most course policies, assessment methods, learning methods, and deadlines, and I always adhere to my policies.
Which of the following best describes the flexibility or course policies, assessment methods, learning methods, and deadlines in your course?	○	○	○	○	○

Other (please describe the flexibility or course policies, assessment methods, learning methods, and deadlines in your course)

30. Consider the opportunities students' in your class have to learn, beyond attending class.

	I mandate that all students attend all classes even when they are not expected to be active learners (students must be there even if they are not needed to add to class discussion).	I provide consequences for not attending class and/or not participating in learning experiences (students in my course lose participation points that cannot be made up).	I provide attendance options for some classes so students may miss a few classes without penalty and/or participation for some activities. Students have the opportunity to make up all components of their grade.	I help students take advantage of opportunities to learn and foster an understanding of consequences of not taking advantage of such opportunities, like missing class. My students recognize why they need to be there even if attendance is not required.
Which of the following best describes the opportunities students' in your class have to learn, beyond attending class?	○	○	○	○

Other (please describe the opportunities students' in your class have to learn, beyond attending class)

31. Approximately how many years have you been employed as a teacher (in any accredited institution of education)?

- ☐ 0-2 years
- ☐ 2-5 years
- ☐ 5-10 years
- ☐ 10-15 years
- ☐ 15-20 years
- ☐ 20+ years

Other (please specify)

32. Pedagogy is defined as the art of teaching and/or the theoretical foundation that supports the actions teachers' take. Pedagogy encompasses both the knowledge and the skill set required for successful teaching. Approximately how formal training in pedagogy have you received and where did you receive the training?

Please choose ONE answer that is most appropriate.

- ○ None at all
- ○ A little through college coursework for my degree(s)
- ○ A little through professional development offered through my employer
- ○ A little through professional development offered outside my employer
- ○ A moderate amount through college coursework for my degree(s)
- ○ A moderate amount through professional development offered through my employer
- ○ A moderate amount through professional development offered outside my employer
- ○ A great deal through college coursework for my degree(s)
- ○ A great deal through professional development offered through my employer
- ○ A great deal through professional development offered outside my employer

Other (please specify)

33. Into which of the following disciplines does your primary teaching assignment fall?

- ☐ Humanities and Fine Arts
- ☐ Life and Physical Sciences
- ☐ Mathematics
- ☐ Oral and Written Communication
- ☐ Social and Behavioral Sciences
- ☐ Other (please specify)

34. At which Missouri Community College do you work?

A reminder - the name of the institution at which you are employed will NOT be reported in the findings of this survey.

- ☐ Crowder College
- ☐ East Central College
- ☐ Jefferson College
- ☐ Metropolitan Community College
- ☐ Mineral Area Community College
- ☐ Moberly Area Community College
- ☐ North Central Missouri College
- ☐ Ozarks Technical Community College
- ☐ St. Charles Community College
- ☐ St. Louis Community College
- ☐ State Fair Community College
- ☐ Three Rivers Community College
- ☐ Other (please specify)

Appendix C

Supplemental Survey Questions for Field Test

35. Approximately how long did it take you to complete this survey?

36. Were the instructions for this survey understandable? What suggestions, if any, do have to clarify the instructions for this survey?

37. Do you have any other information you would like to provide the researcher regarding this survey? Questions? Comments? Suggestions?

Appendix D

Initial Email Invitation to Potential Survey Respondents

Hello [name of potential respondent],

This email is an invitation for you to participate in a research study being conducted through Lindenwood University by Vivian Elder under the guidance of Dr. Sherry DeVore. The purpose of this study, entitled *Benchmarking the Use of Learner-Centered Teaching Practices in Missouri Community Colleges*, is to examine teaching practices used by full-time Gen Ed faculty at Missouri Community Colleges. Your chief academic officer [name of CAO] has been informed of the purpose of this research and endorses your participation. **last sentence only present in emails to participants in which CAO has given permission*

Your participation in this research will involve completion of an online survey that will take approximately 30 minutes.

All community college faculty who currently teach General Education courses at a community college in Missouri are being invited to participate in this research (this is approximately 800 potential participants).

There are no anticipated risks or benefits associated with participation in this research. Your participation is voluntary and you may choose not to participate in this research study or withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.

We will do everything we can to protect your privacy should you choose to participate in this study. As a part of this effort, your identity will not be revealed in any

publication or presentation that may result from this study. A summary report of responses for a given institution may be provided to the chief academic officer of your institution, but all identifying information will be removed prior to presentation. Otherwise, the information collected for the purposes of this study will remain in the possession of the investigator in a safe location.

If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Vivian Elder [redacted] or the Supervising Faculty, Dr. Sherry DeVore (417-881-0009). You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs at 636-949-4846.

By clicking on the link below to access the survey you are giving your informed consent to participate in the research described above. At the beginning of the survey you will be asked to give your informed consent to participate once more. After you have completed the survey, a thank you email with a copy of your informed consent will be emailed to you.

Thank you in advance for your time and assistance!

Vivian Elder

viviankelder@gmail.com

Appendix E

Lindenwood Institutional Review Board Permission to Conduct Research

LINDENWOOD

LINDENWOOD UNIVERSITY ST. CHARLES, MISSOURI

DATE:	September 5, 2013
TO:	Vivian Elder
FROM:	Lindenwood University Institutional Review Board
STUDY TITLE:	[498766-1] Benchmarking the Use of Learner-Centered Teaching Practices in Missouri Community Colleges
IRB REFERENCE #:	
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	September 5, 2013
EXPIRATION DATE:	September 5, 2014
REVIEW TYPE:	Expedited Review

Thank you for your submission of New Project materials for this research project. Lindenwood University Institutional Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to the IRB.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the completion/amendment form for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of September 5, 2014.

Please note that all research records must be retained for a minimum of three years.

If you have any questions, please contact Tameka Tammy Moore at (618) 616-7027 or tmoore@lindenwood.edu. Please include your study title and reference number in all correspondence with this office.

If you have any questions, please send them to IRB@lindenwood.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Lindenwood University Institutional Review Board's records.

Appendix F

Notification of Intent of Research for Chief Academic Officers (CAO)

Hello [name of CAO],

This email is to inform you of a research study being conducted through Lindenwood University by Vivian Elder under the guidance of Dr. Sherry DeVore. The purpose of this study, entitled *Benchmarking the Use of Learner-Centered Teaching Practices in Missouri Community Colleges*, is to examine teaching practices used by full-time Gen Ed faculty at Missouri Community Colleges.

All community college faculty who currently teach General Education courses at a community college in Missouri are being invited to participate in this research. I will be using your faculty's publicly available institutional email accounts to send the invitations to participate in this study. The survey will consist of likert-scale questions that will be used to assign a score of Learner-Centeredness to each respondent. The survey will also contain questions that will be used to identify the participant's number of years of teaching experience, amount and type of training in pedagogy, academic discipline, and the institution at which they are currently employed.

I would like to ask for your endorsement to add to the invitation that will be sent to your faculty. Should you agree to endorse this study, I would be more than happy to provide you with a customized profile of results from participants from your institution at the conclusion of the study. This information could be valuable in providing accountability data to your external stakeholders and/or in informing hiring practices or faculty development efforts.

If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Vivian Elder [redacted] or the Supervising Faculty, Dr. Sherry DeVore (417-881-0009). You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs at 636-949-4846.

Please respond to this email within the next week if you are willing to endorse this study to your faculty. Lack of a response will be interpreted as an unwillingness to endorse the study.

Thank you in advance for your time and assistance!

Vivian Elder

viviankelder@gmail.com

Appendix G

Thank You Email for Survey Participants

Hello [name of respondent],

This email is to thank you for your participation in the research study being conducted through Lindenwood University by Vivian Elder under the guidance of Dr. Sherry DeVore.

At the end of the survey you were asked to identify the institution at which you are currently employed. At the request of your chief academic officer, a summary report of responses for your given institution is being compiled, but please rest assured all identifying information will be removed to protect your privacy. Otherwise, the information collected for the purposes of this study will remain in the possession of the investigator in a safe location.

If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Vivian Elder [redacted]or the Supervising Faculty, Dr. Sherry DeVore (417-881-0009). You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs at 636-949-4846.

Please retain this email for your records as a copy of your informed consent to participate in this research.

Thank you again for your time and assistance!

Vivian Elder

viviankelder@gmail.com

Appendix H

Reminder Email to Potential Survey Participants

Hello [name of potential respondent],

This email is a reminder of the invitation you received to participate in a research study being conducted through Lindenwood University by Vivian Elder under the guidance of Dr. Sherry DeVore. The purpose of this study, entitled *Benchmarking the Use of Learner-Centered Teaching Practices in Missouri Community Colleges*, is to examine teaching practices used by full-time Gen Ed faculty at Missouri Community Colleges. Your chief academic officer [name of CAO] has been informed of the purpose of this research and endorses your participation. **last sentence only present in emails to participants in which CAO has given permission*

Your participation in this research will involve completion of an online survey that will take approximately 30 minutes.

All community college faculty who currently teach General Education courses at a community college in Missouri are being invited to participate in this research (this is approximately 800 potential participants).

There are no anticipated risks or benefits associated with participation in this research. Your participation is voluntary and you may choose not to participate in this research study or withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.

We will do everything we can to protect your privacy should you choose to participate in this study. As a part of this effort, your identity will not be revealed in any

publication or presentation that may result from this study. A summary report of responses for a given institution will be provided to the chief academic officer of your institution, but all identifying information will be removed prior to presentation. Otherwise, the information collected for the purposes of this study will remain in the possession of the investigator in a safe location.

If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Vivian Elder [redacted] or the Supervising Faculty, Dr. Sherry DeVore (417-881-0009). You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs at 636-949-4846.

By clicking on the link below to access the survey you are giving your informed consent to participate in the research described above. At the beginning of the survey you will be asked to give your informed consent to participate once more. After you have completed the survey, a thank you email with a copy of your informed consent will be emailed to you.

Thank you in advance for your time and assistance!

Vivian Elder

viviankelder@gmail.com

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Vita

Vivian Kathleen Elder was born in Springfield, Missouri on December 11, 1978. She attended public school in Republic, Missouri, through sixth grade, until her family moved to Springfield in 1989. She completed her middle and high school education at Greenwood Laboratory School, a laboratory school on the campus of Missouri State University. Vivian continued her post-secondary education at Missouri State University (MSU). In 2000 she graduated Magna Cum Laude from the Honors College with a Bachelor of Science, majoring in Biology with minors in Chemistry and Psychology. She then pursued a Master of Arts in Teaching from MSU, earning her degree in 2006.

During her Bachelor's and Master's work Vivian was employed as a phlebotomist and Microbiology laboratory bench technician at a local hospital. She also worked as the ballet line director for a non-profit dance performance group. In 2004, she was hired as an adjunct instructor at Ozarks Technical Community College (OTC) where she managed labs for Anatomy, Physiology, and Microbiology classes. She gained full-time employment at OTC in 2005, and now primarily teaches lectures and labs in introductory Biology courses for science majors. At OTC, Vivian serves on the Chancellor's Cabinet, as the faculty chair for the Assessment Committee, and as a member of the HLC Assessment Academy team.

Vivian and her fantastic husband, Shaun, spend the majority of their free time watching and playing ice hockey. Shaun and Vivian hope to eventually retire and travel to all the national parks and NHL stadiums in their Airstream with their dogs. In the meantime, they are honing their outdoor skills by attempting to hike and camp the entire Ozark Trail.