Teaching leadership in technical programs at community colleges

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TEACHING LEADERSHIP IN TECHNICAL PROGRAMS AT COMMUNITY COLLEGES

For the degree of Master of Science

Is approved by the final examining committee:

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Approved by Major Professor(s): Jenny Daugherty

Approved by: Kathryne Newton 4/29/2015
Head of the Departmental Graduate Program Date
TEACHING LEADERSHIP IN TECHNICAL PROGRAMS AT COMMUNITY COLLEGES

A Thesis
Submitted to the Faculty
of
Purdue University
by
Amanda Leigh Miller

In Partial Fulfillment of the Requirements for the Degree of
Master of Science

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CHAPTER 1: INTRODUCTION

This chapter provides a basic overview of the presenting study. The introduction includes the scope of the research, the significance of the research, definitions that are necessary to better understand the research, as well as assumptions, limitations, and delimitations of the research.

1.1. Scope

There has been a continuous production of journal articles on the development of the important aspects of technology education, and an increasing rate of curriculum development in technology education across the world (Keirle, 2006). On the other hand, there are hundreds or even thousands of leadership programs that exist on college campuses. These programs, “often complement existing positional leader training programs” (Dugan & Komives, 2007, p. 6).

Although several technology education and leadership development programs are being implemented on college campuses, the existence or number of programs that teach both technology and leadership are not known. There is a “demand for technology leaders to emerge versus those that simply ‘manage’” technology (Little-Wiles, Hackney, & Daugherty, 2012, p. 1). Are collegiate programs preparing technology leaders to meet these needs?

There are technical programs in higher education that are teaching leadership across the United States (Little-Wiles, Hackney, & Daugherty, 2012).
The programs identified have been at baccalaureate-granting universities. What about at the community college level? With the focus of much of the community college curriculum on technical education, it appears to be a prime location to study if, and how, leadership is being taught. The question becomes how do technical programs in community colleges teach leadership?

The emphasis of this research was to identify if, and how, community colleges are creating leadership education. The curriculum and the way community colleges are teaching leadership in technical programs was examined, whether in the form of a certificate, minor, certification, module, or degree. A community college is a college that offers its highest degree as a two year associate degree. Due to the large number of community colleges in the United States and the location of the researcher, only community colleges in the Midwest region were included in the study. The Midwest region is defined by the United States Census (2015) as North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Indiana, Michigan, and Ohio. To further narrow the scope, only the community colleges that are registered with the American Association of Community College (2014) within the Midwest region were included. The American Association of Community College (AACC) is a nonprofit organization that functions as a forum for the nation’s two-year community colleges and is the only association for community colleges to register that can provide information (such as their history, news, publications, and resources) on a national level. The mission of the AACC is to provide “advocacy, leadership and service for community colleges” (AACC, 2014).
The focus of the study was to identify leadership education degrees, certifications, minors, certificates, and/or modules in technical programs. The technical programs identified using the list from the AACC and studied are engineering technologies/technicians, mechanic and repair technologies/technicians, communications technologies/technicians and support services, science technologies/technicians, and military technologies (AACC, 2014). Once the technical programs that have a leadership component were identified then a review of the curriculum of a selected few was conducted. There are four community colleges that were selected. Before interviewing the participants, a web search of each college was analyzed for further information.

1.2. Significance

According to the AACC (2014), there were over 2.8 million full time students enrolled in a community college and over 4.06 million part time students enrolled in a community college. In total there were over 6 million students enrolled in a community college. According to the AACC (2014), 48 percent of students attained a degree from a college or transferred to a four year university in 2005. Community colleges play a significant role in the United States’ higher education system and were thus worthy of studying. Not only are community colleges critical in enabling students to have access to four year universities, but also in providing technical training to help fill the need for more technically trained individuals. It was important to focus on technical programs because according to the AACC (2014), there are a total of 3,079 community colleges in the United States that offer some type of technical program. The type of technical programs
included computer and information sciences and support services, engineering technologies, mechanic and repair technologies, communications technologies/technicians and support services, science technologies/technicians, and military technologies (AACC, 2014).

Universities are teaching leadership to technology students because there are specific skills that a technologist will need to lead rather than possessing general managerial skills (Little-Wiles, Hackney, & Daugherty, 2012). For example, leadership skills, such as communication skills, confidence, and technical knowledge, are important for all technologists and technicians in any environment that they will be in (Little-Wiles, Hackney, & Daugherty, 2012). According to Ahn et al. (2014) “leadership-related skills in engineering” (p. 17) are important skills to have. It is not only important to demonstrate technical skills, but to also have the technical skills to enable technologist the ability to make better decisions (Ahn et al., 2014). This research explored how community colleges are teaching leadership in technical programs to investigate how future technicians and technologists are being equipped with leadership skills.

Furthermore, looking at the skills being taught to future technicians and technologists in the programs created a better understanding of the curriculum that is being implemented. This study is important because we need to know whether and how community colleges are helping fill the leadership gap in technical industries (Magnuson, 2012). This is also significant because it will help instructors understand how other colleges are approaching leadership, and how they are teaching it to improve or add to the development of well-rounded
technology leaders. In addition, community colleges may want to implement leadership programs that can keep up with four year university programs to help students transfer in a smooth manner.

1.3. Definitions

Community College – “any institution regionally accredited to award the associate in arts or the associate in science as its highest degree” (Cohen & Brawer, 2008, p. 5).

Leadership – “to concentrate on the leader as a person, on the behavior of the leader, on the effects of the leader, and on the interaction process between the leader and the led” (Bass & Bass, 2008, p. 15).

Technology Leader – “someone who enables others to understand and operate within the processes used to modify the natural world to create the designed world contributing to effectiveness and success” (Little-Wiles, Hackney, & Daugherty, 2012, p. 1).

Curriculum – “a set of courses constituting an area of specialization.” (Merriam-Webster dictionary, 2014).

1.4. Assumptions

The following assumptions were intrinsic to this research:

- Technologists need certain specific leadership-oriented skills that are different than typical managerial skills.
• Selecting community colleges from the American Association of Community Colleges (AACC) provided a sufficient and appropriate number of community colleges that were included in the study.

• In the Midwest region there were technical programs that offer and were teaching some form of leadership courses or offering a certificate, minor, certification, module, or degree at community colleges.

• The individual interviews and any documentation that was provided by the individuals will give a sufficient amount of information to better understand how community colleges are teaching leadership in technical programs.

• The deans, directors, and chairperson know about the leadership in the technical program(s) and will be able to find the people to interview at the programs from those surveyed.

1.5. Limitations

The following limitations were intrinsic to this research:

• This study only looked at the Midwest region in the United States and did not provide any information about the United States as a whole country.

• The Midwest region was defined from the United States Census (2015), and the community colleges within those states were identified by the American Association of Community Colleges (AACC, 2014). This constrained the number of community colleges that was involved with the study.

• The individuals interviewed for information about the curriculum for the leadership courses and/or program was assumed to have sufficient
information about the courses and/ or programs that they are associated with.

- This study only included community colleges with technical programs, so this did not include any liberal arts, business related degrees, etc.

1.6. Delimitations

The following delimitations were intrinsic to this research:

- This study did not include every community college in the United States, but it included some of the community colleges in the Midwest region that is registered with the American Association of Community Colleges (AACC, 2014).

- This study only covered community colleges with technical programs that are teaching leadership.

- The interviews were with people only involved with the curriculum of the leadership courses and/ or programs that were willing to participate.

- This study only focused on the technical field and no other field was involved with teaching leadership.

1.7. Summary

The research study was introduced by defining the scope and significance. The introduction also provided specific definitions, assumptions, limitations, and delimitations that was relevant to the research. Although it appears that there was a need for leadership skills for technicians and technologists, it is not known whether community college technical programs are
also teaching leadership. Next this study provides background information and relevant literature.
CHAPTER 2: REVIEW OF RELEVANT LITERATURE

Chapter two will cover the literature that has already been published on the topic of this research. It will cover the background of the literature review, where the searches were made, the history and meaning of leadership, community colleges, leadership education within community colleges, and technology leadership.

2.1. Literature Review Background

Leadership is a broad term. There are many definitions and the concept has been thoroughly explored in the literature. Bass and Bass (2008) argued that leadership is something that “has been built into the human psyche because of the long period we need to be nurtured by parents for our survival” (p. 3). This view from Bass and Bass is a starting point on understanding what leadership is and where the origin of leadership comes from. Parents and our human genetic makeup have a large influence on how we deliberate thoughts and act as followers and leaders (Bass & Bass, 2008). The way people are raised by their parents affects the way they act around others. Leadership is one of the oldest skills humans have developed which makes parenting important for human growth and existence (Bass & Bass, 2008). This is where leadership begins, but “there is still a search for psychoanalytical generalizations about leadership, built
on the in-depth analysis of the development, motivation, and competencies of prominent leaders, living and dead” (Bass & Bass, 2008, p. 4).

From when colleges started developing to the 1940s community colleges were commonly known as junior colleges. Throughout the 1950s and 1960s the term community college began being used to describe junior colleges. Cohen and Brawer (2008) define a community college as “any institution regionally accredited to award the associate in arts or the associate in science as its highest degree” (p. 4). Forming local colleges in communities has been a significant trend. For example Cohen and Brawer (2008) stated that public and private community colleges have grown from 74 colleges in 1915-1916 to 1,173 colleges in 2004-2005. In the Midwest region of the United States alone there are 203 community colleges named by the American Association of Community Colleges in 2014 (AACC, 2014). This great increase in community colleges shows that they are important in the United States’ higher education system.

2.2 Search Areas for Literature Review

The researcher used several different search tools to collect information for the literature review. The primary search tools that were used were Google Scholar, Purdue University Libraries, Educational Resources Information Center (ERIC), and the American Association of Community Colleges. The best method that was very helpful was the Purdue University Libraries, next best method was Google Scholar, then ERIC was somewhat helpful, and lastly the AACC was helpful to have a general understanding of the most recent news of community colleges.
The first search engine that the researcher used was Google Scholar. This was used first to have an overall better understanding of what is available and to refine the search terms. There were many search terms that were looked up such as leadership, leadership education, leadership theory and practice, and leadership curriculum education. This purpose of using Google Scholar first was to get some general knowledge of leadership, leadership education, and a good foundation of information to start the literature review.

After looking on Google Scholar the researcher identified several books focusing on leadership and community colleges, this led the researcher to the Purdue University Libraries. The researcher searched the online search engine of Purdue University library to know which libraries had the books that best fit the research. The key words included words such as education, leadership, community colleges, and educational leadership in community colleges. The researcher was able to identify leadership theory and research books, as well as books specifically on community colleges.

To further understand more about community colleges there was a search conducted of the Educational Resources Information Center (ERIC). ERIC is a widespread database of many education related literature. To have an enhanced understanding of community colleges and further information about where the colleges are today, an overview of the American Association of Community Colleges website was included into the search.

2.3. Leadership: The History and Meaning
Leadership is a broad term. According to Bass and Bass (2008) before
becoming a leader, the leader must have been a follower because the leader
would have a better understanding of the followers. By 1948 there were a
number of studies of leadership that showed the traits of leaders and their
importance; these were “capacity, achievement, responsibility, participation, and
have viewed and defined leadership in different ways throughout the decades;
from the 1920s the definition included terms such as “obedience, respect, loyalty,
and cooperation,” (p. 15) from the 1930s it was defined as “a process through
which the many were organized to move in a specific direction by the leader,”
(p.15) from the 1940s to lead was directing with power, from the 1950s leading in
groups was the focus, from 1960s the definition was broaden “to move others in
a shared direction,” (p. 15) from the 1970s “the leader’s influence was seen as
discretionary,” (p. 15) from the 1980s it was “inspiring others,” and from the
1990s to influence “the leader and the followers who intended to make real
changes that reflected their common purpose” (p. 15).

Several authors have defined leadership by differentiating it from
management. According to Popovici (2012) management is “the process of
setting and achieving organizational goals through its functions: forecasting,
organization, training and monitoring-evaluation” (p.126), and leadership is “the
ability to influence, to make others follow you, the ability to guide, the human side
of business for ‘teacher’” (p. 126). The difference is that a leader provides the
vision and managers accomplish the goals or tasks towards the vision. Some
argue that it is important to establish the difference between manager and leader because they are responsible for different roles within an organization and should thus be educated and trained differently. For example a manager’s attitude towards goals is to take an objective and passive outlook, as well as to accomplish the goals provided to them. A leader on the other hand takes a personal and active outlook and shapes the ideas of the company, and sets the company’s direction by changing how people think about what is possible (Zaleznik, 1977).

According to Hogan et al. (1994) “leadership involves persuading other people” and leaders “pursue a common goal that is important for the responsibilities and welfare of a group” (p. 3). Leadership occurs when the group implements the goals of the group as their own. Psychologists have developed ways to identify certain predictors of successful leadership, including “measures of cognitive ability and normal personality, structured interviews, simulations, and assessment centers” (Hogan et al., 1994, p. 6).

Zaccaro (2007) believed that leaders have certain traits that distinguish them from others. Zaccaro defined leadership as “a unique property of extraordinary individuals whose decisions are capable of sometimes radically changing the streams of history” (p. 6). Often pointed to as one of the original theories of leadership is trait theory (Northouse, 2013). Trait theorists have attempted to define the universal traits leaders possess in their genetic makeup. A trait is a “construct based on consistent individual differences between people” (Bass & Bass, 2008, p. 103). According to Zaccaro (2007) a leader trait is
defined as “relatively coherent and integrated patterns of personal characteristics, reflecting a range of individual differences, that foster consistent leadership effectiveness across a variety of group and organizational situation” (p. 8). According to this theory, leadership may not be learned as these traits are inherent to the leader (i.e., a born leader).

While traits theorists focus on personality characteristics, other leadership theorists offer a skills approach to leadership (Northouse, 2013). Leadership as a set of skills and abilities translates into leadership being able to be learned and developed. The focus of this approach is on identifying the knowledge and abilities needed for leadership. The difference between traits and skills is that traits are who leaders are and skills are what leaders can accomplish. It is important to understand that there are certain skills that leaders need to have, and that they can be learned and taught through education. Some of these skills are interpersonal, cognitive, business and strategic skills (Mumford, Campion, & Morgeson, 2007). It is argued that the leader’s skills have the most impact on organizations and their problems (Northouse, 2013). According to Northouse (2013),

“…the skills approach provides a structure that is very consistent with the curricula of most leadership education programs. Leadership education programs throughout the country have traditionally taught classes in creative problem solving, conflict resolution, listening, and teamwork, to name a few. The content of these classes closely mirrors many of the components in the skills model. Clearly, the skills approach provides a
structure that helps to frame the curricula of leadership education and
development programs” (p. 59).

The skills approach provides a structure for leadership education and provides
structure for education curriculum.

Longo and Gibson (2011) stated that “leadership is centered in community
and the common good” (p. 115), and that students learning leadership “invest in
community through service, scholarship, and action” (p. 115). Investing in the
community will benefit the people living in the community and the local
businesses. Bass and Bass (2008) indicated there is an increase in education
leadership which then increases the students’ capacity to use “personal
influence, make proper use of power, motivate others, negotiate and mediate
effectively, and take initiatives” (p.1060). This education leadership will provide
students with improved skills to effectively lead people in the community.

There are many other leadership theories and approaches that can be
described. For example, Leader-Member Exchange theory is conceptualized as
“a process that is centered on the interactions between leaders and followers”
(Northouse, 2013, p. 161). Leader-Member Exchange theory discusses the
specific relationship between the leader and follower as well as recognizing that
there are in-groups and out-groups within groups or teams. Another leadership
theory is the situational approach to leadership, which argues “is that different
situations demand different kinds of leadership” (Northouse, 2013, p. 99). The
situational approach indicates that in certain situations there is a style of
leadership that should be implemented into a given situation.
Northouse (2013) defines leadership as “a process whereby an individual influences a group of individuals to achieve a common goal” (p. 5). Defining leadership as a process means that it is not linear, that it is interactive between the leader and followers, and indicates that anyone can become a leader (Northouse, 2013). The common goal is that a group of individuals are trying to accomplish something together, and the group is being influenced by the leader (Northouse, 2013).

2.4. **Community Colleges: The History and Meaning**

Cohen and Brawer (2008) stated that community college in America ages back to the early twentieth century. In the beginning of their formation, community colleges gave legitimacy with a document (or diploma) to indicate that an individual is knowledgeable of the area that was studied. This idea of higher education promoted these new colleges across America. Studying science was seen as contributing to society. As society improved itself with community colleges, they needed to stay up to date on the new technologies to be able to teach to the students. As new technologies emerged, new skills needed to be taught. Also people with a college education advanced more quickly. The public viewed community college as an “avenue of upward mobility and a contributor to the community’s wealth” (Cohen & Brawer, 2008, p. 2).

There are two names that people are familiar with: junior college and community college. Junior colleges were how they were originally referred until the 1940s. During the 1950s and 1960s the term *community college* came around. Cohen and Brawer (2008) defined a community college as “any
institution regionally accredited to award the associate in arts or the associate in science as its highest degree” (p. 5). The development of community colleges shows the history of the growth of higher education. As higher education enrollments grew in the 1900s there was a high demand for more space within colleges. Well-known universities like University of Michigan, Stanford University, University of Georgia, and University of Minnesota had proposed other ideas of what the education system would look like for a two year college. For example, one idea was to make the two year colleges a non-research based institution (Cohen & Brawer, 2008). The individuals that came from these universities were unsure of what the community college system would look like, but they all had a common vision of a two year education system.

According to Cohen and Brawer (2008) a “rapid growth in the high school population in the early years of the twentieth century led to student demand for additional years” (p.10). Businesses saw great potential for community colleges because it allowed their workers to get an education and learn new skills. The more community leaders there were, the more community colleges were in demand, as well as giving a certain status about the community. In the United States there is a belief “that all individuals should have the opportunity to rise to their greatest potential” and community colleges help serve this function (Cohen & Brawer, 2008, p. 11).

According to the AACC (2014), in the twentieth century, there were many challenges that faced the United States. Leaders (national and local leaders) recognized that there was a need for more skilled people in the workplace to
strengthen the economy. There was a need to have more educated employees, yet 75 percent of the high school graduates did not further their education due to an unwillingness to travel long distances for college.

During the twentieth century, high schools were pursuing several different ways to help their communities. According to the AACC, high schools would add college level programs to their high school, which was known as the high school based community college. Like community colleges, small universities also have similar principles such as having small class sizes, close student-faculty relationships, and had both programs and extracurricular activities. With the high school based community college and the small university principles, these two types of programs were merged together into what is known today as community colleges. According to the AACC (2014), the merge was to serve the need of the local communities for higher education. They were small community colleges, but offered great academics and various student activities.

The community colleges have made a significant impact on the United States economy. According to the AACC (2014), the total amount of former students who were employed in the United States workforce in 2012 was 806.4 billion dollars in added income in the national economy. Also in 2012, 809 billion dollars which is 5.4 percent of the America’s Gross Domestic Product is the makeup of the total effect of community colleges has on the economy in the United States (AACC, 2014).

Overall community colleges in the United States have increased. For example, in the school year of 1915-1916 there were a total of 74 (public and
private) community colleges and the number has increased dramatically in the school year of 2004-2005 with a total of 1,173 (public and private) community colleges (Cohen & Brawe, 2008). The growth of these colleges shows that this type of higher education is still in demand and still preparing students for the workforce in the United States. The “community college as neighborhood institution did more to open higher education to a broader population” (Cohen & Brawe, 2008, p. 16-17).

According to Alfred (2012), most colleges are coming across opportunities for student growth offering skills for the new economy. In more recent years, community college’s student populations have grown in the United States and the Midwest region. According to the National Student Clearinghouse Research Center (2015), the enrollment of all two year colleges in the fall of 2003 was 5.436 million students compared to fall of 2014 when there were 7.005 million students enrolled. In the Midwest region there was also an increase in student enrollment at two year colleges. In the fall of 2003 there were about 1.299 million students and in the fall of 2014 there were about 1.477 million students enrolled in community colleges.

2.5. Technology Leadership

According to Little-Wiles, Hackney, and Daugherty (2012) “our global society is increasingly dependent on technology, the ability to make informed decisions and participate in guiding technological developments appears to be an important role” (p.1). Also there is an increase in technology in organizations, which creates a demand for technology leaders. A technology leader is more
important than those that simply manage the tools of technology. In a study of
technology leaders, researchers identified common characteristics across
technology leaders, which include “curiosity, technical knowledge,
communication skills, leading change, open-mindedness, and confidence” (Little-
Wiles, Hackney, & Daugherty, 2012, p. 8).

Bass and Bass (2008) indicate that there has been a focus devoting
training programs to know how to lead scientists, engineers, and technicians.
According to Bass and Bass (2008):

“Many new supervisors enter a technical firm with insufficient education in
science, so remedial programs are made available for them. Although
supervision and leadership often become major responsibilities for
engineers and scientists as they progress in their organizations, their
preparation for these responsibilities is left until they have graduated from
their professional schools and are at work” (p. 1110).

Liker, Haddad, and Karlin (1999) argued that “technology’s impact on work
is contingent on a broad set of factors, including the reasons for its introduction,
management philosophy, the labor-management contract, the degree of a shared
agreement about technology and work organization, and the process of
technology development and implementation” (p. 577). Technology can be
viewed from different theoretical paradigms. One of these paradigms indicates
that the correct technology will guide the individual to the desired results; this is
known as technology determinism. Another paradigm, called management
technology, indicates that the right technology and the correct process will lead
an individual to success. The difference between these paradigms is that the
technology determinism is that the technology determines the results, and
management technology is about the process in how an individual leads. As a
technology leader this is important to understand how to lead with and through
technology (Liker, Haddad & Karlin, 1999).

According to Bharadwaj (2000) there are steps to building a strong
organizational capacity, which are self-assessment, benchmarking, and
competitive advantage. According to Feeny and Willcocks (1998) there are nine
core information system capabilities, which are leadership, business systems
thinking, relationship building, architecture planning, making technology work,
informed buying contract facilitation, contract monitoring, and vendor
development. These are essential activities need to be efficiently managed for
general information technology capability (Feeny & Willcocks, 1998). Focusing
on the leadership aspect there are effective skills that these technology leaders
have to have. These leaders need to have a plan for the organization including
leaders must set goals and provide direction in each area of the organization.
The technology leaders influence the overall business and establish strong
relationships with other businesses, and influence those relationships to share a
common vision. Leaders determine the values and culture of the business
(Feeny & Willcocks, 1998). As for the technology aspect of the nine core
capabilities, Feeny and Willcocks (1998) included having technology knowledge
as important for a leader in technical organizations to be able to solve any problems.

2.6. Summary

The purpose of this research was to determine how community colleges are creating leadership education. Understanding the history and meaning of leadership provides the researcher with knowledge of where leadership theory and education have been and where it is going. It is a broad concept and leadership education programs in community colleges will vary in their disciplinary focus. The importance of this research is to identify what aspects of leadership are important for future technologists. This study focused on how these programs are teaching or implementing leadership education.

Community colleges in the United States were the main focus and the population was the professors and administrators within the colleges. The unit of analysis was technical community college programs teaching leadership. The focus on community colleges on how they are teaching leadership was important because there are many key skills that are needed in organizations, and another major point is to have a smoother transition from a two year college to a four year university. The technical program included the college curriculum and objectives of the program. Community college programs are significant in that many are focused on technology. Understanding how the technical programs are teaching leadership skills to future technicians and technologists was significant because it will help instructors understand how other colleges are approaching leadership.
and how they are teaching it to improve or add to the development of well-rounded technology leaders.
CHAPTER 3 FRAMEWORK AND METHODOLOGY

3.1. Framework

The purpose of this research was to understand how community colleges are creating leadership education. The research problem was focused on how to identify what aspects of leadership are important to future technologists. The unit of analysis was a community college program teaching leadership. Community college programs were significant in that several are focused on technology and it is important to understand how these programs are implementing leadership. Studying how technologists are being taught leadership and being prepared for the workforce was important to broaden our understanding of technology and leadership education.

3.2. Methodology

The research design for this study used mixed methods. First, quantitative data was collected by sending a survey to community college deans, chairs, and directors and then qualitative data was collected by doing interviews with individuals from the community colleges. A list of community colleges in the Midwest region that is registered with the American Association of Community Colleges (AACC, 2014) was generated and a web search conducted to identify technical programs that teach leadership. The research questions this study sought to address were:
1. How many technical programs in community colleges in the Midwest Region (registered with the AACC) teach leadership?

2. What types of curriculum (degree, certification, minor, certificate, and module) are offered that embed leadership in the identified technical programs?

3. How are selected programs teaching or implementing leadership education?

In order to answer the first and second research questions, technical programs teaching leadership were identified through a survey. This survey was emailed out to the Dean/Chair/Director of Technology, Dean/Chair/Director of Business, and the Dean/Chair/Director of Management of the community colleges from the AACC in the Midwest region.

As for the third question, key individuals were identified on the survey and contacted to schedule interviews to identify how these programs were offering leadership. An example of the key individual could have been a teacher who teaches a leadership course and/or someone who was a part of developing the course/curriculum. Four programs were chosen and an in depth analysis of the selected number of cases was conducted. Information was collected through the interviews and documents such as course syllabi to understand how leadership is being conceptualized and taught. Also, the community colleges’ website was analyzed to have a better understanding of the college and program. No face-to-face interviews were conducted. Interviews were conducted over the phone and were recorded with an audio recorder, as well as notes taken during the interview. The interview data was analyzed to describe the development of the
leadership curriculum and its focus, as well as themes that were identified across all of the programs studied to identify any similarities and differences of the programs within the community colleges.

3.3. Research Setting

The research setting will include the location of where the study was done. The region was stated and the states within the region were noted. Also the population and participants will be discussed further in this section.

3.3.1. Study Location

The location of this study was very general in the fact it was focused on the Midwest region of the United States. The way that the Midwest region was defined was by the United States Census. According to the United States Census (2015), the states that are in the Midwest region are Indiana, Illinois, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota. The AACC provided a list of community colleges in the Midwest region.

3.3.2. Population and Participants

The population for this study was the community colleges in the Midwest Region in the United States. The participants for this study were employees of the community college. The employees for the survey were the Dean/Chair/Director of Technology, Dean/Chair/Director of Business, and Dean/Chair/Director of Management. These employees for the interviews have some association with the development of the curriculum of the program (whether the program is a course, certificate, minor, or degree). The employees included a
teacher who teaches a leadership course, a curriculum developer, and/or any individual who has something to do with the curriculum.

3.4. Approval

The approval by the department of Purdue University in the College of Technology and Purdue University IRB was necessary for the study.

3.4.1. Department

The department approved the research that was produced by the College of Technology at Purdue University, specifically through the Department of Technology Leadership and Innovation. The committee also approved the study to pursue this research.

3.4.2. IRB

IRB approved this research study. There was contact with human participants in the interviewing process, so IRB approval was necessary to receive permission to continue with the research study. The necessary steps were taken to get IRB approval and the approval forms are in Appendix A. The participants were allowed to opt out of the research interviews at any time.

3.5. Survey

Qualtrics was used to develop the survey, which were sent out via email to all the Dean/ Chair/ Director of Technology, Dean/ Chair/ Director of Business, and Dean/ Chair/ Director of Management from the community colleges in the Midwest region. The dean, chair and director’s contact information (via email) was collected by searching the community colleges official website. The questions from the survey can be found in Appendix B.
The first two questions were asked to everyone who takes the survey. If a participant answered “no” to question two then the survey ended, but if they answered “yes” to question two then the participant continue to answer the rest of the questions.

After receiving the information from the surveys, four community colleges were chosen to conduct a more thorough analysis of their leadership education. Four community colleges were identified by selecting from the top down on the list of options given on the survey. For example, those that offer degrees were selected first, then certifications, next minors, then certificates, then modules, and lastly other. Then the names of the programs were analyzed to match under the technology programs from the AACC. Once the four community colleges were picked then those community colleges were contacted via email, and the four colleges’ websites was analyzed to have a greater understanding of the college, program, mission statement, and vision.

3.6. Interviews

The interviewees were conducted individually and were done over the phone. The interviews were audio recorded and notes were taken during the interview. No face-to-face interviews were conducted. The interviews were approximately twenty minutes long. Before the interviews, there was an email sent out to the participants asking for any documents such as a syllabus. These documents were collected to have a better understanding of how they are teaching leadership. There were questions used to guide the interviews, but
follow up questions were asked. The interview questions can be found in Appendix C.

3.7. Analysis

The research data included notes, web searches of the colleges program(s), and the documents collected during the study. The analysis was done by the main themes across all interviews. For example, if all the participants being interviewed said that they want their students to have learned good communication skills while going through their program, then this would be a theme across the interviews. The first step was to collect the survey data and analyze the data. The second step was to indicate the four community colleges that are further researched through their website. The third step was to contact, via email, individuals from the four community colleges to set up a phone interview. The fourth step was to interview the individuals. Lastly, the interviews and any documents collected from the individuals were analyzed. This provided a full analysis of the research and the data that was collected.

3.8. Summary

The purpose of this research was to understand how community colleges are creating leadership education in technical programs. The problem was to identify what aspects of leadership are important to future technologists. There are three research questions that addressed the study using a survey and interviews from employees at community colleges. The United States Midwest region was the population and the participants were the Dean/Chair/Director of Technology, Dean/Chair/Director of Business, and Dean/Chair/Director of
Management, and any employees that have an association with the programs curriculum (for example a teacher or curriculum developer). The analysis was conducted through research data that included a survey, notes taken during the interviews, transcribing the interviews, web searches, and any other data collected during the study. Approval by Purdue University College of Technology department and IRB was needed for this study.
CHAPTER 4: FINDINGS

Chapter four covers the findings of the three research questions. The purpose of this research was to understand how community colleges are creating leadership education. The research problem was focused on how to identify what aspects of leadership are important to future technologists and technicians. The three questions were addressed through a survey to 203 community colleges and interviews of individuals representing technical programs at community college programs that integrate leadership. Of the 203 community colleges, 30 percent completed the survey. Of those that completed the survey, 54 percent of community colleges indicated that they offered a form of leadership education.

4.1. Technical Programs in Community Colleges Teaching Leadership

The first research question for this study was: how many technical programs in community colleges in the Midwest region (registered with the AACC) teach leadership? The surveys were sent out via email to the participants on Friday, February 20, 2015 and the survey was closed two weeks later on Friday, March 6, 2015. There were 82 participants that started the survey. Only 68 of those participants completed the entire survey, representing 61 community colleges. There were four community colleges that had more than one participant complete the survey. Two of those community colleges had one participant mark that they did not have a technical program teaching leadership and another
participant of the same community college marked that they did have a technical program teaching leadership. Since some participants may not be aware of the entire new curriculum being offered in different colleges and programs, it would be assumed that the community college does have a program.

![Technical Programs Teaching Leadership](image)

*Figure 1.* Technical programs teaching leadership.

Figure 1 shows how many community colleges are teaching leadership in their technical program(s) based on the responses from the survey. The left bar indicates the participants who stated “no” and the right bar indicates participants who stated “yes.” Out of the 61 colleges who completed the survey, 28 community colleges are not teaching leadership in their technical programs and 33 community colleges are teaching leadership in their technical programs. Also this indicates that 54 percent of community colleges in the Midwest region are teaching leadership and 46 percent are not teaching leadership.
According to the surveys, out of the 61 colleges only seven of those community colleges have had leadership education for more than 10 plus years. This indicates that leadership education is an emerging area for community colleges. There are 54 percent of community colleges teaching leadership and 11 percent of the community colleges have had these programs for over 10 years. With the emergence of leadership education is it becoming more important for technicians and technologists.

The community college names will not be indicated but the states represented in the Midwest region will be identified. North Dakota and South Dakota were the two states that did not have any community colleges participate in the survey so no conclusions can be made about their programs. The other 10 states had individuals from at least two community colleges participate and complete the survey.

![Number of Community Colleges](image)

*Figure 2. Number of Community Colleges Participating.*
Figure 2 indicates how many community colleges participated in each state. Wisconsin had 11 community colleges that had technical programs teaching leadership, Michigan had 10, Ohio had eight, Missouri had seven, Illinois had six, Iowa had six, Kansas had six, Minnesota had three, Indiana had two, and Nebraska had two.

Table 1

Community Colleges Participants by State

<table>
<thead>
<tr>
<th>State</th>
<th>Participated</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illinois</td>
<td>6</td>
<td>41</td>
<td>15%</td>
</tr>
<tr>
<td>Indiana</td>
<td>2</td>
<td>4</td>
<td>50%</td>
</tr>
<tr>
<td>Iowa</td>
<td>6</td>
<td>11</td>
<td>55%</td>
</tr>
<tr>
<td>Kansas</td>
<td>6</td>
<td>17</td>
<td>35%</td>
</tr>
<tr>
<td>Michigan</td>
<td>10</td>
<td>31</td>
<td>32%</td>
</tr>
<tr>
<td>Minnesota</td>
<td>3</td>
<td>24</td>
<td>13%</td>
</tr>
<tr>
<td>Missouri</td>
<td>7</td>
<td>16</td>
<td>44%</td>
</tr>
<tr>
<td>Nebraska</td>
<td>2</td>
<td>7</td>
<td>29%</td>
</tr>
<tr>
<td>North Dakota</td>
<td>0</td>
<td>6</td>
<td>0%</td>
</tr>
<tr>
<td>Ohio</td>
<td>8</td>
<td>27</td>
<td>30%</td>
</tr>
<tr>
<td>South Dakota</td>
<td>0</td>
<td>2</td>
<td>0%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>11</td>
<td>17</td>
<td>65%</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>203</td>
<td>30%</td>
</tr>
</tbody>
</table>

Note. Participated and total means the number of community colleges. The percentage means the percent of how many community colleges participated.

Table 1 provides the number of community colleges by state who participated in the study compared to how many community colleges total located in the state. This measures community college participants by state. It shows how many colleges participated in each state, the total amount of colleges in that state, and the percentage of who participated out of how many total there are. It
also measures how many colleges participated in the amount and the percentage of colleges who participated. This provided a percentage of how many community colleges responded and completed the survey by state. Table 1 also indicates that 30 percent of the community colleges that were contacted completed the survey. There were a total of 203 community colleges (registered with the AACC) that were contacted and 61 colleges had participants who completed the survey. The sample size for the survey was 272 individuals who were a Dean, Director, and/or Chairperson of Business, Management, and/or Technology representing 203 community colleges. The survey results indicate that 33 community colleges in the Midwest region are teaching leadership in their technical program(s).

![Colleges by State Implement or Not Implement Leadership Education](image)

*Figure 3. Colleges by state implementing leadership education.*

According to the survey results, Michigan and Missouri each have six colleges that do not implement leadership education in their technical programs.
Wisconsin has the most technical programs with six colleges that do implement leadership education. According to the survey results, Indiana and Minnesota are the only states that did not have any participants state that they do not provide leadership education. Missouri and Nebraska each have the least amount of community colleges, at one college that provides leadership education in the Midwest region. North Dakota and South Dakota are the only two states that did not have any participants that participated in the survey.

4.2. Types of curriculum that embed leadership in technical programs

The second research question was focused on what types of curriculum (degree, certification, minor, certificate, and module) are offered that embed leadership in the identified technical programs? The five kinds of curriculum plus an “other” category that was provided in the survey for the participants to answer were: degree, certification, minor, certificate, and module. Table 2 indicates the survey results for the type of leadership curriculum offered, including 11 degrees, three certifications, zero minors, one certificate, one module, and 10 that stated “other.” The participants that stated “other” were given an option to write what they meant by “other.” Responses included: “none,” “don’t understand question,” “practicum,” or provided some type of course such as “developing leadership skills” and “effective team building for managers.”

According to Table 2, a degree (11 colleges) was the most popular type of curriculum, and a minor (zero colleges) was the least popular type of curriculum. The category “other” was the second most prevalent with 10 colleges,
certification was third with three colleges and one college each offered a certificate and module tying.

Table 2

*Types of curriculum of leadership in technical programs*

<table>
<thead>
<tr>
<th>Degree</th>
<th>Certification</th>
<th>Minor</th>
<th>Certificate</th>
<th>Module</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

Based on the survey results, there are 22 community colleges that offer some type of leadership curriculum in their technical programs within the Midwest region.

![No. of Community College that Teach Leadership in Technical Programs by State](image)

*Figure 4. Number of Technical Programs by State.*

Figure 4 indicates how many colleges in each state provide some type of leadership curriculum in their technical program(s). Specifically, the number of types within each state is: (a) Michigan has three types, (b) Indiana has two types, (c) Ohio has two types, (d) Illinois has three types, (e) Kansas has two types, (f) Nebraska has one type, (g) Iowa has two types, (h) Minnesota has one
type, and (i) Wisconsin have six types of curriculum of leadership education. Participants representing Missouri’s programs did not answer what type of leadership curriculum they offered in their technical program(s).

Of those that responded, individuals from three of the community colleges from Indiana, Nebraska, and Wisconsin indicated that there was more than one type of curriculum offered. Two community colleges provided a degree and a certification, and one college provides a degree, certification, and certificate that contain leadership curriculum.

4.3. Programs teaching or implementing leadership education

After the survey results were collected and analyzed, the second stage of this research project was to understand more fully how the technical programs were teaching leadership. This addresses the third research question of this study: how are selected programs teaching or implementing leadership education? In order to do this, representatives of selected community college programs were identified for interviews. The first step in selecting individuals representing the technical programs teaching leadership four community colleges was to determine which colleges had marked that they had a curriculum. The participants who identified that they had a curriculum whether it be a degree, certification, minor, certificate, module, or other were selected to move on to the second step of the process. The second step was to select from those survey respondents who provided contact information. The survey included a question asking participants to provide their contact information if they would be interested in discussing their programs further.
Finally, another filter was added to the pool of possible programs to interview. Each program name was reviewed to make sure it represented a technical program as defined by the AACC (i.e. engineering technologies/technicians, mechanic and repair technologies/technicians, communications technologies/technicians and support services, science technologies/technicians, and military technologies (AACC, 2014)). With the process of first indicating what colleges had a curriculum, then identifying who provided contact information, and lastly having that program match the technical programs defined by the AACC it was possible to narrow down the number of community colleges to four community college technical programs teaching leadership.

The four community college programs were in the states of Illinois, Iowa, Kansas, and Michigan. After multiple attempts to contact and schedule interviews with participants from the four programs, participants from two of the community college programs were interviewed. Participant A’s job title is “Department 2 Co-Chair” and participant B’s job title is “Department Chair.” With the participants being in an administration role and not a teaching role, this may limit their intimate knowledge of what is taught in the curriculum and in the class room. Each of these programs has a leadership course in their program that focuses on leadership skills.

There were two participants that represented two community colleges in the interview process. This is a sufficient amount of participants because two participants represented 50 percent of the colleges programs that were selected to be interviewed. There were 33 out of the 61 community colleges that had
some type of leadership education in their programs. With this representing 54 percent of the community colleges having leadership education it aligns with having a similar percentage participating in the interviews.

Prior to conducting the interviews, the program’s websites were reviewed. The four community college programs’ websites provided some information concerning their curriculum. However, the information provided online about their curriculum reflected no courses that contain the word “leadership” in their title. This does not mean however that they do not teach leadership because the content of the course might provide leadership education. The information from their websites is shared next, followed more detailed analysis of the two programs that had participants agree to an interview.

4.3.1 Program Websites

Program A is from a community college in Kansas. The program was specifically identified in the survey as: welding, automation engineering, and manufacturing engineering. To identify courses that might integrate leadership education, leadership skills as identified by Northouse (2013) and Mumford, Campion, and Morges (2007) was used as key searches. These skills included technical, human, and conceptual sets of skills (Northouse, 2013) and cognitive, interpersonal, business, and strategic sets of skills (Mumford, Campion, and Morges, 2007). Based on a review of the course titles on the website, the course that most likely embeds leadership is a course called “Work Ethics.” The rest of the courses in the program apply specifically to the technology majors. Based on the course description, the course teaches “skills required for success in the
workplace with focus on the development of positive work habits and communication skills.” Program B is from a community college in the state of Illinois that includes an Associate in Applied Science (AAS) degree in construction: trade technology. This degree does not offer a course that has the word “leadership” in the title, but they do offer a course called “Labor Management Development” that might include aspects of leadership. Based on the course description, the course teaches “Analysis of leadership skills (motivation, planning, communication, conflict resolution). Personal development required for career advancement.” Program C is a degree in computer information systems from a community college in the state of Michigan. This degree also does not include a course that has the word “leadership” in any of the titles. They offer courses related to the major, as well as college composition, fitness and wellness, content area composition and research, and a math course. Based simply on the titles, it is not clear which of these courses implement leadership in some form.

Finally, program D is an AAS degree in engineering technology from the state of Iowa. This degree does not offer a course that has the word “leader” in their title, but they offer a course that might imbed leadership into their content. The course is called “Changes and Choices.” Based on the course description of “Changes and Choices” the course teaches “the impacts of change...some needs and hopes that they share with all humans as well as needs and hopes that make them unique...describe interconnections between their chosen occupation/daily life and the Humanities...[and] explain how to use a decision-
making strategy...” The other required courses for the degree are related to the technology major and other courses such as math, economics, and sociology.

4.3.2 Program Documents

In addition to the interviews, the participants provided documents associated with the programs that were analyzed. The documents included a course syllabus and a course information form; both of which outlined some of the learning outcomes and descriptions of the courses that are provided by the colleges. This provides information to understand the courses and potential outcomes needed for technology leaders.

Participant A provided a document of the course syllabus of their leadership course. The syllabus provides a course description, institution wide outcomes, course outcomes and competencies, course assessment and evaluation, accommodations statement, academic honesty description, incomplete grade description, and accreditation. The three main categories that will be described in more depth are the course description, institution wide outcomes, and the course outcomes and competencies because this is the main focus area of the research topic. The course description includes: “skills required for success in the workplace with focus on the development of positive work habits and communication skills.” This provides an explanation of the overall course and what will be learned in the course.

Secondly there are institution wide outcomes from the community college. The first outcome is to think critically and make rational decisions by analyzing quantitative and non-quantitative information. The second outcome is to establish
skills that are necessary for different technologies and methods. The third outcome is to have the ability to effectively communicate through speaking and writing. The last outcome is to have effective interpersonal skills.

The final category that will be analyzed are the course outcomes and competencies. There are several outcomes and competencies that are listed in the syllabus. The first outcome is the importance of honesty in the workplace. Second outcome is the ability to describe positive work behaviors such as respecting others, cooperation, confidentiality, and assertiveness. The third is about positive attitudes, self-confidence, and realistic personal expectations. The fourth outcome is being able to demonstrate time and stress management techniques. The fifth outcome is to understand the importance of positive communication skills. The sixth outcome is to demonstrate how leadership skills, criticism and conflicts, problem-solving skills, and following policies enhance career success. The last outcome is to demonstrate the importance of legal and ethical issues, cultural and racial diversity.

Participant B also provided an “information form” document on their leadership course. The information form provides information about the course number, general objectives, the textbook, major course segments, and the learning outcomes. The general objective for this course is that the students will become an effective leader through the knowledge and skills that are necessary for a leader. The textbook that is used for this course is “Introduction to Leadership” by Peter G. Northouse.
The learning outcomes for this course are stated in the information form. The first learning outcome is to be able to define leadership, describe characteristics of a leader, identify different leadership styles, and able to explain solutions to problems. The second learning outcome is being able to identify the autocratic and democratic workplaces, identify any current leadership trends and styles used in labor situations, ability to define internal and external customer service, and to be able to explain the effects of poor internal customer service in the workplace. The third learning outcome is to be able to define motivation, understand the hierarchy of needs, able to identify strategies for motivation, and able to apply coaching in different scenarios. The fourth learning outcome is being able to define project management, ability to list the steps of project management, identify project planning tools, and able to describe how to establish a critical path. The fifth learning outcome is to be able to define communication, as well as list barriers, able to explain the value of feedback, and able to explain the value of well-defined roles on a team. The sixth learning outcome is to be able to define conflict, as well as identify solutions, and understand the process of negotiation. The last learning outcome is being able to define and understand the various roles of the supervisor in a project, and be able to understand the methods of an effective supervisor that are used in different situations.

This is the description of each document that was provided in the interview process. Participant A provided a course syllabus and participant B provided an
information form that described the course. Analyzing these documents provides more information about the program’s approaches to leadership education.

4.3.3 Programs Interviewed

In order to understand the program’s approach to leadership more fully, there was an email sent to the contact information provided to set up an interview with the representative of the four programs. Five days later another email was sent out resulting in two individuals from the four programs participating. Representatives from two of the community college programs described above were interviewed about how they are teaching leadership within their technical programs. The researcher approached the interviews in a semi-structured and professional manner with an interview script with key questions to guide the discussion. The interviews were audio recorded with notes taken during the discussion. The interviews ranged from 16 to 22 minutes in length. There were three main themes that emerged across both interviews. The themes were identified by analyzing the interview data and the documents that were provided and noting any consistencies in what the participants said and the documents described. These themes are: (a) career preparation was how the interviewees approached leadership education, (b) technical knowledge is the priority of their programs, and (c) communication skills and confidence were identified as important leadership skills. These issues were described in enough detail to warrant them being identified as themes. After describing the themes a summary of the interviews will be provided.
The first common theme is that both programs’ goals were to prepare their students for the workplace. Interviewee A stated, “We are not expecting to change people to immediately be a leader in their job sites...however many people who do complete a degree with us end up becoming a shift supervisor...so over time yes they do enter into leadership, on the job leadership roles.”

Interviewee A focused on a majority of the discussion on how their students need to act in the workplace, like showing up on time and getting along with their boss. Interviewee B stated, “…in a community college setting all of our students are walking out of here and in typically right into the workforce.” The two interviewees both indicated that their students enter the workplace immediately after graduation; they do not transfer to a four-year university. Interviewee A stated that “we are trying to teach them work ethics: get to work, do what you’re told, get along...” Also interviewee B indicated some skills that are taught in their course such as motivation skills, communication skills, and being able to identify solutions to conflict as essential components of workforce readiness.

The second common theme that emerged in both interviews is that technical knowledge is the priority of their programs. Interviewee A states “to say we have leadership focus is kind of a secondary thing for us; we clearly have a get to learn focus.” This interviewee indicated that leadership is secondary and implied that the technical knowledge is the primary focus. Interviewee A also stated “many people who go into the technical areas go into the tech areas because they are hands on learners.” This just reinforces that the technical
knowledge is the most important part of their curriculum and that leadership is secondary. Interviewee B stated that “We teach them a leadership course along with our gen. ed. requirements to complete the associates’ degree.” This indicates that the leadership course is part of the general education for their technical students, so this implies that leadership is not their primary focus.

The third theme was communication skills and confidence identified as important leadership skills. Both interviewees talked about both of these and it also reflected from the documents that were provided. Communication skills were both identified in the documents that were provided under the outcomes of the course and program. Confidence was an important factor as well. Interviewee B indicates that they don’t want their students “to stay at the bottom of the barrel” and by providing them with these leadership skills it will give them the confidence they need to work their way up in their careers. Interviewee A indicated that they hoped their “students have enough confidence in themselves” to be able to “step up to the plate when those opportunities arrived.” Having confidence within them was an important part of having this course so that their students can step up in leadership moments during their career.

It appears that there was a difference in how the participants were defining leadership and how leadership is defined in much of literature review for this study. The definition of leadership used in this study was “to concentrate on the leader as a person, on the behavior of the leader, on the effects of the leader, and on the interaction process between the leader and the led” (Bass & Bass, 2008, p. 15). Both participants who were interviewed seem to define leadership
as workplace readiness. Both participants indicated that their advisory committee had an impact on the courses that they offer as leadership courses. The classes seem to prepare students to go directly to the workplace and teach students the "soft" skills (for example showing up to work on time).

The origin of the leadership course in this particular program was from an advisory committee’s recommendation to address some problems that the program was experiencing. Interviewee A stated that,

“They beat us up over the fact that: students don’t get to work on time, students don’t come every day, students are never ready to work, they can’t get along with their co-workers, they can’t get along with the boss…”

The advisory committee responded to these issues by recommending they create a course to teach their students skills to help them in the workplace. They decided this course should also integrate some leadership skills. Interviewee A stated that they are not trying to create leaders; they are trying to create workers who show up on time and are respectful. The interviewee stated that although their goal is not to make their students immediate leaders, the students may assume leadership positions like shift supervisor and will need a foundation of leadership skills.

In terms of how leadership is taught in their curriculum, interviewee A discussed some of the instructional activities that were used in the leadership course they offer their students. The first activity the interviewee indicated was the chess game. First they learn how to play chess, but that is not the main objective. The main objective is to learn the thought process and the strategies
the students use. For example when playing chess an individual has to see all their options, understand which move to make, see better moves after already making a move, thinking before speaking or making a move, and thinking things out before making a move. While the students are playing chess they are gaining skills and the instructor makes the connection to strategies and how it applies to the real world. The second activity is called “We Care Teaming.” This activity is about how to get along in the workplace and how to relate to people. The activity uses a color system to identify what type of person you are while engaging in a scenario. For example, the interviewee explained that blue means you are good at problem solving, red means that you are mad at everything, and grey means you just do not care. The two activities are used in this course to help the students learn leadership skills to help better them in the workplace.

The other interviewee, interviewee B, representing one of the programs seemed to approach the teaching of leadership in a more lecture based approach. The interviewee stated the course description as, “an analysis of leadership skills, motivation, planning, communication, conflict resolution, personal development required for career advancement.” The interviewee indicated that they use a book called “Introduction to Leadership” written by Peter Northouse and study the leadership skills that are identified in the book. The reason they chose this book is because it provides a more generic approach to leadership education.

This program implements a leadership course in their union skilled trades program and this course is also part of the curriculum for students who graduate
with an associate’s degree in applied science. Interviewee B stated that it was important for their students to understand leadership because their students generally go straight into the workforce after graduation. These leadership skills that are taught in the course would help prepare them for the workplace and enable them to move up in their jobs.

The course content focuses on developing leadership skills such as motivation, communication, and conflict resolution. As for the curriculum this course includes exams and a group project to demonstrate these leadership skills and abilities. Leadership seems to not be the main focus however a skill that can help the students in the workplace.

4.4. Summary

There were some common themes across the two interviews. The first common theme is that both colleges’ goals are focused on preparing their students for the workplace. This is not surprising as community college missions are typically focused on workplace preparation. The second common theme is that how they approached leadership as a skill that can be taught and learned. They have identified leadership skills that they believe their students need to be successful in the workplace and can help them advance in their careers. Although there is an emphasis on leadership embedded in the curriculum, their primary focus is on the technical skills.
CHAPTER 5: DISCUSSION AND CONCLUSION

The focus of this research study was to identify if, and how, community colleges are creating leadership education in their technical programs. Another focus of this study was to identify how the community college programs were approaching leadership education; the different types of offerings whether in the form of a degree, certification, minor, certificate, and/or module. The purpose of this research was to understand how community colleges are creating leadership education. It is important to understand how programs are implementing leadership into their technical programs to broaden our understanding of technology and leadership education. The findings explore how future technologists are being taught leadership and how they are being prepared for the workplace.

5.1. Discussion

The first research question was: how many technical programs in community colleges in the Midwest region (registered with the American Association of Community Colleges) teach leadership? To answer this question the first step was to make a list of the community colleges that were registered with the AACC. There were a total of 203 community colleges in the Midwest region and 61 colleges had 272 participants (a Dean, Director, and/or Chairperson of Business, Management, and/or Technology) complete the survey.
There were 33 community colleges that stated they do have leadership education in their technical program(s). Each state in the Midwest region had a participant complete the survey except North Dakota and South Dakota. With 33 out of the 61 community colleges state that they do teach leadership which indicates that 54 percent of the community colleges in the Midwest region teach leadership in their technical program(s). There are community colleges in the Midwest region that believe leadership is important to teach their technicians and technologists. According to the surveys, out of the 61 colleges only seven (11 percent) of those community colleges have had leadership education for more than 10 plus years. According to the data in this research study, it seems that leadership education is an emerging area for community colleges. There are 54 percent of community colleges teaching leadership and 11 percent of the community colleges have had these programs for over 10 years. This seems to indicate that more community colleges in the Midwest are implementing leadership education. According to the results of this study, it seems that leadership is becoming more important for technicians and technologists.

The second research question is what types of curriculum (degree, certification, minor, certificate, and module) are offered that embed leadership in the identified technical programs? The technical programs identified using the list from the AACC (2014) and studied are engineering technologies/technicians, mechanic and repair technologies/technicians, communications technologies/technicians and support services, science technologies/technicians, and military technologies. Based on the survey responses, there were 11 degrees, three
certifications, no minors, one certificate, one module, and 10 other. Responses from the participants that marked “other” included: “none,” “don’t understand question,” “practicum,” or provided some type of course(s) such as “developing leadership skills” and “effective team building for managers.” Each state indicated that they had some type of curriculum except Missouri, North Dakota, and South Dakota. There were 26 responses that identified different types of curriculum that were indicated, but only 22 community colleges participated in indicating what type of curriculum they offer. A few community colleges offer more than just one type of curriculum. According to the survey, no community college in the Midwest region provides a minor in leadership within their technical programs. Several community colleges in the Midwest region indicate that they have programs of leadership education in the form of degrees, certifications, certificates, modules, and “other” forms of leadership education. Based on the surveys, degrees was the most popular type with 11 community colleges having a leadership curriculum. However it appears the participants might have selected degree to indicate that leadership was a part of the major, not a major itself. For example a name of a program that would have qualified as a degree would be “Technology Leadership,” not “Engineering Technology” and a course providing leadership education. In the case of the Engineering Technology degree, the participant should have selected “module” or “other” indicating that they provide a course or embed leadership in there technology degree. Upon reviewing the websites of the four programs selected for interviews, it was clear that leadership was not a part of the degree name but a component, typically in a course.
The third research question was how are selected programs teaching or implementing leadership education? There were four community colleges that were selected through a process to identify those that would be most informative to how they approach leadership. The four colleges were in the states of Illinois, Iowa, Kansas, and Michigan. These participants were contacted and two community colleges were included in the interviews. The participants that were interviewed came from Kansas and Illinois. An analysis of the four college’s websites was done before the interviews. All four colleges did not have any courses that have the word “leadership” in the title, but there were some courses that may imply that they imbed leadership in their courses. The participants who were interviewed both discussed their programs that had one course included leadership as part of the curriculum.

There were three themes across the two interviews. The first common theme was that the programs’ approach to leadership was tied to their goal of preparing their students for the workplace. The participants both indicated that their students enter the workplace immediately after graduation and that the leadership aspect of their program will help them with their career. The second common theme was that technical knowledge is the priority of their programs. The last common theme was that communication skills and confidence identified as important leadership skills. Both participants stated that the students need to learn skills of leadership and that these skills, such as communication and confidence, can be taught.
It seems that the community college programs’ primary focus is on career readiness more than leadership development. With the goal of most community colleges is to prepare students to enter the workplace after graduation, it makes sense to emphasis certain career readiness skills more than leadership skill. However, given that there are continual calls for better leadership in industry, perhaps community college programs should include more leadership education. In addition, what about the students who transfer to a four year program? Should those students develop certain leadership skills? Also what makes the common leadership skills that were indicated in the interviews (technical knowledge, communication skills, and confidence) more important than other leadership skills? Are these skills adequately preparing the student for the workplace? What about the students, who transfer to a four year program; will they have to learn different leadership skills to help prepare them for the four year program?

5.2. Recommendations for Practice

Based on the findings and conclusions from this study, there are two primary recommendations for individuals in higher education considering or implementing leadership into their technical programs: (a) technical knowledge should not be sacrificed when implementing leadership education and (b) technology programs should target technical knowledge, communication skills, and confidence. It seems that industry is calling for students to be prepared not only in the technology but to possess some leadership skills. As one of the participants indicated, that their industry partners were satisfied with the students’ technical ability, but not satisfied with their leadership ability. So having a well-
rounded technician may be more important for industry and leadership education might provide that training. This may give the industry better technicians who can work well with people, have better communication skills, the ability to motivate, and give them confidence to do their job well. This may change the way technical programs approach their curriculum in the way that they are looking at a technician as a whole person, not just being able to have the technical knowledge, but possessing the leadership skills as well.

The first recommendation for technical programs is that technical knowledge should not be sacrificed when implementing leadership education. As Little-Wiles, Hackney, and Daugherty (2013) stated, “leaders must possess a broad base of technological knowledge; its processes, products, and implications, as well as the interpersonal skills necessary to be able to influence and motivate others” (p. 1). The two participants that were interviewed indicated a very similar approach. They both believed it was important for their students to have the technical knowledge of what they were studying, but also the interpersonal skills that was needed to be able to work with others in the workplace. Technical knowledge was the primary concern however; leadership was a minor component of the curriculum.

The second recommendation for technical programs is that technology programs should target technical knowledge, communication skills, and confidence. In terms of specific learning outcomes associated with leadership in technology curriculum, the interviews revealed some consistent components as in the literature. For example, in the Little-Wiles, Hackney, and Daugherty (2013)
study, they indicated “six characteristics: (a) curiosity; (b) technical knowledge; (c) communication skills; (d) leading change; (e) open-mindedness; and (f) confidence” (p. 8) that are key for technology leaders. Technical knowledge, communication skills, and confidence were also identified by the interview participants as important learning outcomes. As has already been described, technical knowledge is of paramount concern in both technical programs. In addition, one of the interview participants emphasized that they wanted their students to have the confidence in themselves after graduating and getting into the workplace. The other interview participant indicated communication skills were a key part of the course description.

5.3. Recommendations for Future Research

Based on the findings of this research study there are also recommendations for future research. The first two recommendations are essentially the same: to increase the sample size included in the study to provide more information about how technical programs are implementing leadership education. The first recommendation would be to expand the population size of the survey from the Midwest region to the United States. Surveying all community colleges within the United States would give more opportunities to see as a country how community colleges are implementing leadership education. The second recommendation is to increase the number of programs interviewed. This would provide more information about how community colleges are implementing leadership education. This can give a broader picture and a
better indicator of what the common themes are across the different types of leadership curriculum being offered.

The last method that could be included in future studies is to spend more time within the programs, such as sitting in on some of the classes that are teaching leadership. This would give the research a better understanding of how the teachers are implementing and teaching leadership, and to observe the students on how they are learning.

5.4. Conclusion

There are three conclusions that can be made from this research study. The first conclusion is according to the surveys, there are 33 community colleges in the Midwest region, which are registered with the AACC, who teach leadership. Out of the 61 community colleges only seven of those have had leadership education for more than 10 plus years. With only 11 percent of the community colleges having leadership for more than a decade, it seems that leadership education is emerging into community colleges curriculums. The second conclusion is according to the surveys, degree, certification, certificate, and module are the types of curriculum that embed leadership in the technical programs. In the surveys, degrees had the most amount of community colleges that have a leadership curriculum; there were 11 degrees that the surveys indicated. However it appears the participants might have selected degree to indicate that leadership was part of the major. The last conclusion is that there are three common themes that the interviewees discussed, which are: (a) career preparation was how the interviewees interpreted leadership, (b) technical
knowledge is the priority of their programs, and (c) communication skills and confidence identified as important leadership skills. The leadership course provides students the skills that will be needed for the workplace and specific leadership skills that can be developed.

The interview participants emphasized that leadership skills are important for their students so they can have the ability to work with people in the workplace and to help their students to move up in their careers. The surveys indicate that there are many community colleges in the Midwest region providing some sort of leadership education. It seems to be a trend that in leadership there are skills to be taught and students need to learn these skills to help better them develop as a leader within their technical careers after graduation.

According to Magnuson (2012) that there is a need to “reduce or eliminate the skills gap that currently exists within many industries” (p. 52). Therefore the gap still exists today where leadership and industry need to collaborate better. With the education system and providing more leadership courses in community colleges it can be a great starting point to make this gap much smaller. According to Magnuson (2012), the education community needs to realize that not all businesses have the money to provide leadership education for their employees. Implementing leadership education in community colleges can have a great effect on business that may not have the money to provide the leadership education. The businesses and education community can collaborate together by having the education community provide these courses and the businesses can provide opportunities such as internships (Magnuson, 2012). Although some of
the community colleges that were analyzed for this study are implementing a form of leadership education, perhaps there is untapped potential for these technical programs to provide more instruction around key leadership skills beyond workplace readiness, communication skills, and confidence.
LIST OF REFERENCES
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APPENDICES
Appendix A: IRB Approval

To: JENNY DAUGHERTY
   YONG
From: JEANNIE DI CLEMENTI, Chair
       Social Science IRB
Date: 02/20/2015
Committee Action: Approval
IRB Action Date 02/20/2015
IRB Protocol # 1412015585
Study Title Teaching Leadership in Technical Programs at Community Colleges
Expiration Date 02/19/2016

Following review by the Institutional Review Board (IRB), the above-referenced protocol has been approved. This approval permits you to recruit subjects up to the number indicated on the application form and to conduct the research as it is approved. The IRB-stamped and dated consent/assent, and/or information form(s) approved for this protocol are enclosed. Please make copies of these document(s) both for subjects to sign should they choose to enroll in your study and for subjects to keep for their records. Information forms should not be signed. Researchers should keep all consent/assent forms for a period no less than three (3) years following closure of the protocol.

Revisions/Amendments: If you wish to change any aspect of this study, please submit the requested changes to the IRB using the appropriate form. IRB approval must be obtained before implementing any changes unless the change is to remove an immediate hazard to subjects in which case the IRB should be immediately informed following the change.

Continuing Review: It is the Principal Investigator's responsibility to obtain continuing review and approval for this protocol prior to the expiration date noted above. Please allow sufficient time for continued review and approval. No research activity of any sort may continue beyond the expiration date. Failure to receive approval for continuation before the expiration date will result in the approval's expiration on the expiration date. Data collected following the expiration date is unapproved research and cannot be used for research purposes including reporting or publishing as research data.

Unanticipated Problems/Adverse Events: Researchers must report unanticipated problems and/or adverse events to the IRB. If the problem/ adverse event is serious, or is expected but occurs with unexpected severity or frequency, or the problem/event is unanticipated, it must be reported to the IRB within 48 hours of learning of the event and a written report submitted within five (5) business days. All other problems/events should be reported at the time of Continuing Review.

We wish you good luck with your work. Please retain copy of this letter for your records.
RESEARCH PARTICIPANT CONSENT FORM

Teaching Leadership in Technical Programs at Community Colleges
Jenny Daugherty
College of Technology
Purdue University

What is the purpose of this study?
The purpose of this research is to understand how technical programs at community colleges are embedding leadership education. Also understand how many technical programs in community colleges in the Midwest region teach leadership and what types of curriculum are offered that embed leadership in the identified technical programs.

What will I do if I choose to be in this study?
You will participate in an online survey with six questions. This survey will be conducted with an online Qualtrics-created survey.

How long will I be in the study?
The survey questionnaire will take approximately 10 minutes or less.

What are the possible risks or discomforts?
The research states minimal risks to you. The risks are no greater than you would encounter in daily life. The questions and answers to the questions should not pose an infraction or violation of any law, trust, faith, or promise. These are inoffensive questions and will not pose any threats to you. Your name and the community college's name will not be used in any publications. Only the general term of Midwest region of the United States community colleges will be used in publications.

Are there any potential benefits?
There are no direct benefits to you, but there may be benefits to society at large.

Will information about me and my participation be kept confidential?
The project's research records may be reviewed by Purdue's Institutional Review Boards (IRB), the principal investigator, the co-investigator, and by departments at Purdue University responsible for regulatory and research oversight. All data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by the primary investigator. The records will be stored in a locked storage cabinet until May 30, 2018.

What are my rights if I take part in this study?
Your participation in this study is voluntary. You may choose not to participate or, if you agree to participate, you can withdraw your participation at any time without penalty or loss of benefits to which you are otherwise entitled. If you withdraw in the middle of the research study and you wish not to participate any further your data will be destroyed immediately and not used in the study.

Who can I contact if I have questions about the study?
If you have questions, comments or concerns about this research project, you can talk to one of the researchers. Please call the co-investigator, Amanda Miller, at 949-547-4944 or email at almiller@purdue.edu.
Appendix B: Survey

RESEARCH PARTICIPANT CONSENT FORM

What is the purpose of this study?
The purpose of this research is to understand how technical programs at community colleges are creating leadership education. Also the purpose is to understand how many technical programs in community colleges in the Midwest region teach leadership and what types of curriculum are offered that embed leadership in the identified technical programs.

What will I do if I choose to be in this study?
You will participate in an online survey with six questions. This survey will be conducted with an online Qualtrics-created survey.

How long will I be in the study?
The survey questionnaire will take approximately 10 minutes or less.

What are the possible risks or discomforts?
The research project contains minimal risks to you. The risks are no greater than you would encounter in daily life. The questions and answers to the questions should not pose an infraction or violation of any law, trust, faith, or promise. These are inoffensive questions and will not pose any threats to you. Your name and the community college’s name will not be used in any publications. Only the general term of Midwest region of the United States community colleges will be used in publications.

Are there any potential benefits?
There are no direct benefits to you, but there may be benefits to society at large.

Will information about me and my participation be kept confidential?
The project’s research records may be reviewed by Purdue’s Institutional Review Boards (IRB), the principal investigator, the co-investigator, and by departments at Purdue University responsible for regulatory and research oversight. All data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). The data collected will be stored in the HIPAA-compliant Qualtrics-secure database until it has been deleted by the primary investigator. The records will be stored in a locked storage cabinet until May 30, 2018.

What are my rights if I take part in this study?
Your participation in this study is voluntary. You may choose not to participate or, if you agree to participate, you can withdraw your participation at any time without penalty or loss of benefits to which you are otherwise entitled. If you withdraw in the middle of the research study and you wish not to participate any further your data will be destroyed immediately and not used in the study.

Who can I contact if I have questions about the study?
If you have questions, comments or concerns about this research project, you can talk to one of the researchers. Please call the researcher, Amanda Miller, at 948-547-4944 or email at amiller@purdue.edu.
If you have questions about your rights while taking part in the study or have concerns about the treatment of research participants, please call the Human Research Protection Program at (765) 494-5942, email (irb@purdue.edu) or write to:

Human Research Protection Program - Purdue University
Ernest C. Young Hall, Room 1032
155 S. Grant St.
West Lafayette, IN 47907-2114

Documentation of Informed Consent
I have had the opportunity to read this consent form. I have had the opportunity to ask questions about the research study. I am prepared to participate in the research study described above. I may print a copy of this form for my records.

I have read and understood the above consent form and desire of my own free will to participate in this study.

☐ Yes
☐ No
What is the name of the college you work at?

In your technology program(s), is one of your objectives to teach leadership?
- Yes
- No

What is the name of the program(s) that have leadership?

What type of program is the leadership education?
- Degree
- Certification
- Minor
- Certificate
- Module
- Other:

How long have you had this leadership education program?

Can you provide me a name and/or contact information to follow up with for more information about the program?
Appendix C: Interview Questions

- How are these programs teaching or implementing leadership in your education system?
- Why is it important for leadership to be taught in technical programs?
- If you teach a course what leadership courses do you teach?
- What type of leadership skills do you teach?
- What do you think is important for your students to know about leadership?