

# Teaching Leadership in Technical Programs at Community Colleges

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## Abstract

This descriptive study explored how community colleges are teaching leadership in technical programs. Leadership education curricular offerings were identified via a survey and selected programs reviewed. 68 Deans, Directors, or Chairpersons of a Business, Management, or Technology program completed the survey, representing 61 community colleges. A review of four programs was conducted through web searches and interviews of leaders representing two of these programs were conducted. Leadership education is an emerging area for community colleges; one that is narrowly defined as workplace readiness, communication, and confidence building activities. There appears to be a need for technical programs to teach students leadership skills, as well as technical skills. Further research is needed to determine which leadership skills are needed for technologists at the community college level.

## Introduction

The intersection between technology and leadership is one that university educators from both disciplines are seeking to understand in order to better inform their curriculum. The impact of technology on leadership is often viewed with a focus on the technology itself, especially information technology (DeSanctis & Poole, 1994; Lewis, Agarwal, & Sambamurthy, 2003). For example, e-leadership has been offered as a theoretical model for leading virtually through technology (Avolio, Sosik, Kahai, & Baker, 2014; Kissler, 2001). From the perspective of the technically trained workforce, leadership has been increasingly recognized as an important (and often missing) skill (Racine, 2015). Leadership development programs have been incorporated in technology-focused majors such as engineering (Simpson, Evans, & Reeve, 2012) and agriculture (Stedman & Weeks, 2013) providing technical students the opportunity to develop leadership skills.

Universities are incorporating a focus on leadership because of a recognized need for students to acquire specific skills needed to lead rather than a sole focus on general managerial skills (Ahn et al., 2014). As Haber (2012) noted, leadership development “receives considerable attention as an outcome of student learning within higher education” (p. 27) across all disciplines leading to “an explosion in the growth of student leadership programs on college campuses in the United States” (Brungardt, Greenleaf, Brungardt, & Arensdorf, 2006, p. 4). Specifically, within more technical disciplines, such as science, technology, engineering and mathematics (STEM),

there has been an increasing call for a more “holistic development” (Clegorne & Mastrogiovanni, 2015) of graduates. Racine (2015) noted that scientists and engineers face challenges when assuming leadership positions which some “can be attributed to incomplete leadership knowledge, some to the situation, and some to social development” (p. 23).

Despite the recognized need for technically trained students to develop more leadership abilities, there is little research exploring how technology programs are incorporating leadership; what is being taught, how, and with what results. As Clegorne and Mastrogiovanni (2015) argued, “finding the balance between technical preparation and holistic development has proven elusive writ large with a majority of public emphasis being placed on the technical side of the spectrum more often than not” (p. 46). This study explores whether, and if so how, technical programs in community colleges are teaching leadership.

The focus on community college technical programs is due to their prevalence in the United States’ higher education system and their focus on technology education. According to the American Association of Community Colleges (AACC), there were over 6 million students enrolled in community colleges in the United States in 2014 (2.8 million full-time students and over 4.06 million part-time students). The AACC is a nonprofit association for community colleges that provides information (such as their history, news, publications, and resources) on a national level. Not only are community colleges critical in enabling students to have access to four-year universities, but also they are key in providing training to help fill the need for more technically trained employees in the United States. Given the large number of students enrolled and the emphasis on technology education, a descriptive study designed to investigate whether and how community college technical programs are incorporating leadership education is warranted. Specifically, this study sought to address the following research questions:

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?

This study is significant because it will help educators understand how technology-focused programs are approaching leadership, and how they are teaching it to improve or add to the development of well-rounded leaders in technology.

## Literature Review

**Leadership and Technology.** Leadership is not uniformly defined in the literature or in practice. This is an important point when considering how educators teach leadership. Several have sought to define leadership by differentiating it from management. For example, Popovici (2012) argued that 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” (p. 127). A leader provides the vision and managers accomplish the tasks towards the vision or so it is

argued. This differentiation is important when considering many educational institutions have management schools and leadership programs co-existing.

Another important distinction made in the literature is between “leader” development focusing on the individual development of a leader as opposed to “leadership” development that is concerned with preparing individuals for leadership within a particular organization (Day, 2000). Leader development is more so the domain of programs that focus on the cognitive development of leaders (i.e., Foldy, Goldman, & Ospina, 2008), as well as developing their identity as a leader (i.e., Komives, Owen, Longenbeam, Mainella, & Osteen, 2005; Lord & Hall, 2005). Particular domains might blur the edges of leader and leadership development; preparing students collectively for leadership meanwhile incorporating activities that enable students to consider their individual strengths and gaps.

When considering the education of leaders, it is important to consider the behaviors or qualities leaders need to develop. A skills-based approach to leadership is a common framework to support development programs and curriculum (Northouse, 2016). For example, Katz’s (1955) foundational work identified three types of skills needed for leaders at different levels of an organization. These three types of skills are: (a) technical skills, which are those that involve specialized competencies and hands-on abilities; (b) human skills, such as assisting group members in working cooperatively and creating an atmosphere of trust; and (c) conceptual skills that include the ability to do the mental work of shaping meaning around organizational work and policy. More recent work has attempted to identify the leadership skills needed for today’s organizational environments.

Lord and Hall (2005) described the development of leadership skills as occurring “over an extended period of time, with multiple loosely-connected skills first effort-fully (although not necessarily completely consciously) attempted” (p. 611). Over time the leadership skills become routine and driven by the values or identity developed by the leader. Mumford, Campion, and Morgeson (2007) also outlined a framework for leadership as skilled performance. They described key leadership skill sets in categories such as interpersonal, cognitive, business and strategic as they pertain to creative problem solving in complex social contexts.

Courses in leadership education programs often mirror these skill sets enabling students to develop creative problem solving, conflict resolution, and teamwork skills. The increase in the number of leadership development programs in higher education is an indication of the need for these types of skills in industry. Bass and Bass (2008) argued leadership programs have the potential to increase the students’ capacity to use “personal influence, make proper use of power, motivate others, negotiate and mediate effectively, and take initiatives” (p.1060). Longo and Gibson (2011) extended beyond the personal and argued that leadership education enables students to “invest in community through service, scholarship, and action” (p. 115) because leadership is inherently about the common good.

Many of the skills identified to be crucial in leadership development (i.e., creative problem solving, goal setting, and teamwork) appear to overlap greatly in the education of technologists, particularly those that aspire to or are called to leadership roles in organizations. However, some have argued that there is a gap in the students’ education whereby they obtain

the technical skills but acquire very few of the necessary leadership skills. For example, Bass and Bass (2008) described this gap stating that although leadership becomes a major responsibility of engineers and scientists, “their preparation for these responsibilities is left until they have graduated from their professional schools and are at work” (p. 1110). Leadership development programs in technology education have emerged to help fill this need.

The question becomes which leadership skills are particularly needed for technologists, engineers, or other more technically trained individuals. Little research has been conducted to identify a list of leadership skills needed for technologists. Little-Wiles, Hackney, and Daugherty’s (2012) study of a small sample of technology leaders identified common characteristics, which included “curiosity, technical knowledge, communication skills, leading change, open-mindedness, and confidence” (p. 8). Some authors have identified the need for leadership skills in particular technology industries and articulated some of the competencies needed. For example, Feeny and Willcocks (1998) identified leadership as a core capability specifically for information system technologists. The leadership skills they identified were the ability to have a plan for the organization including its structures, processes, and staffing, being able to set goals and provide direction, to establish strong relationships with other businesses, and to influence those relationships to share a common vision.

**Community Colleges.** When considering the preparation of technologists and technically trained individuals, a key educational institution in the United States for higher education in technology is the community college. 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). Public and private community colleges have grown from 74 colleges in 1915-1916 to 1,173 colleges in 2004-2005 (Cohen & Brawer, 2008). 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).

Community colleges (also referred to as junior colleges) have a rich history in the U.S. higher education system. Throughout the 20<sup>th</sup> century, the value placed on higher education promoted these new colleges across America and particularly appealed to those who did not want to move away to attend a university. Higher education was seen as a source of advancement and as more individuals were attaining high school diplomas more outlets for higher education were needed. As more community colleges responded to this need, the curriculum evolved to meet the demands of industry for certain types of education and training. For example, as new technologies emerged, new skills needed to be taught. Also, people with a college education advanced more quickly in positions of leadership. Early in their formation, the public viewed community colleges as an “avenue of upward mobility and a contributor to the community’s wealth” (Cohen & Brawer, 2008, p. 2).

Community colleges continue to serve a significant role in the United States economy. According to the AACC (2014), the total amount of added income to the national economy contributed by former community college students employed in the United States in 2012 was 806.4 billion dollars. The growth of these colleges shows that this type of higher education is still in demand and preparing students for the workforce in the United States. 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 specifically, there was also an increase in student enrollment at two-year colleges. In the fall of 2003 there were 1.299 million students and in the fall of 2014, there were 1.477 million students enrolled in community colleges.

## **Method**

The research design for this descriptive study used mixed methods to address the research questions. Quantitative data was collected using an online survey sent to community college Deans, Chairs, and Directors to determine the number of technical programs in Midwestern community colleges that teach leadership using a particular type of curriculum. For this study, a community college was defined as a college that offers its highest degree as a two-year associate degree. According to the AACC (2014), there is a total of 3,079 community colleges in the United States that offer some type of technical program. Due to this large number of community colleges in the United States and the location of the researchers, only community colleges in the Midwest region were included in the study. The Midwest region is defined by the United States Census (2015) as including the following states: North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Indiana, Michigan, and Ohio.

To further narrow the scope of this study, only the community colleges in the Midwest that are registered with the AACC in 2014 were included. This resulted in the creation of a database of 203 AACC Midwestern community colleges. A web search was conducted to identify the email addresses of a Dean/ Chair/ Director of Technology, Dean/ Chair/ Director of Business, and/or Dean/ Chair/ Director of Management for each community college. The survey link was emailed to an administrator of one or more of these units under the assumption that they would be aware of any technical programs in their college that have a leadership education component. The technical programs included in this study are specified by the AACC as 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. In addition to obtaining information about the college and whether they were aware of a program that has an objective to teach leadership, the questions included on the survey asked what type of curriculum the leadership education is offered in (Degree, Certification, Minor, Certificate, Module, or Other) and how long it has been offered.

As for the third question, qualitative data was collected via informal interviews to understand how the programs are teaching leadership. One of the survey questions asked for individuals to provide their contact information if interested in participating in an interview asking questions about their programs. Unfortunately, only individuals representing four programs indicated interest and data was collected online concerning these programs. After three requests via email over a two-week period and a phone call at the end of the two-week period leaving a voice message explaining the request for participation in the study, individuals representing only two of these programs agreed to participate in interviews and provided course syllabi to understand how leadership is being conceptualized and taught.

The low number of interview participants is a limitation of the study in addressing research question 3. However, due to narrowing to the Midwest region to focus the study and manage the large number of programs to email the survey, the lack of information on leadership education available online, and only four individuals indicating interest in being interviewed and only two responding to repeated requests, only two programs were studied. The qualitative data including the interview responses and syllabi provide insight into how these programs are approaching leadership education and enables the identification of issues needing further research. Given the study is descriptive in nature, the interviews and syllabi provided data deemed trustworthy in describing the leadership education in the identified programs.

Before the interviews were conducted, there was an email sent to the participants asking for any documents such as a syllabus or program information. These documents were collected to have a better understanding of how they are teaching leadership and to help frame the interviews. Interviews were conducted over the phone and were recorded with an audio recorder, as well as notes taken during the interview. The interviews were approximately twenty minutes long. The interviews were guided by questions on how the programs were teaching leadership; 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; and what do you think is important for your students to know about leadership. These questions were used to guide the interviews and follow up questions were asked to probe comments made by the participants.

The survey responses, syllabi, and interview data was analyzed in stages to first describe how many community college programs are teaching leadership education (research question 1), using what type of curriculum (research question 2). The survey also served as the tool for identifying and selecting the interview participants. The interview participants provided the syllabi, which was analyzed to identify how leadership was being included in the course(s) and to help inform the interview questions. The interview data was transcribed and analyzed by one of the researchers of this study, who also analyzed the syllabi and conducted the interviews. This researcher first summarized the participants' responses to the questions and then compared the two participants' responses to identify similarities or differences. The summary and comparison of responses were shared with the other researcher who probed for clarity and together determined themes.

## Findings

**Quantitative Results.** The first research question for this study sought to understand how many technical programs in community colleges in the Midwest region teach leadership. The sample size for the survey was 272 individuals who were a Dean, Director, or Chairperson of Business, Management, or Technology representing 203 community colleges. In total, 68 individuals completed the entire survey, representing 61 community colleges. There were four community colleges that had more than one participant complete the survey. Table 1 provides the number of community colleges that participated in the survey from each state, the total number of community colleges in that state, and the percentage of who participated out of the total number in the state. Two participants from one community college responded differently (one indicating there was a technical program teaching leadership and one indicating there was

not). Since some participants may not be aware of new curriculum being offered across the same college, it was assumed that the community college did have a technical program teaching leadership.

Table 1

*Community Colleges Participants by State*

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

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

Of the individuals that completed the survey, 52 percent (n=32) indicated that their community college offered a form of leadership education. Figure 1 shows the number of community colleges that either indicated yes, there is a technical program offering leadership education, or no there is not. For example, participants from community colleges in Indiana and Minnesota indicated that there was a technical program providing leadership education. Another item on the survey asked how long these programs existed and out of the 61 technical programs, only seven of them have had leadership education for more than 10 plus years. This indicates that leadership education is an emerging area for community colleges.

### Colleges by State Implement or Not Implement Leadership Education

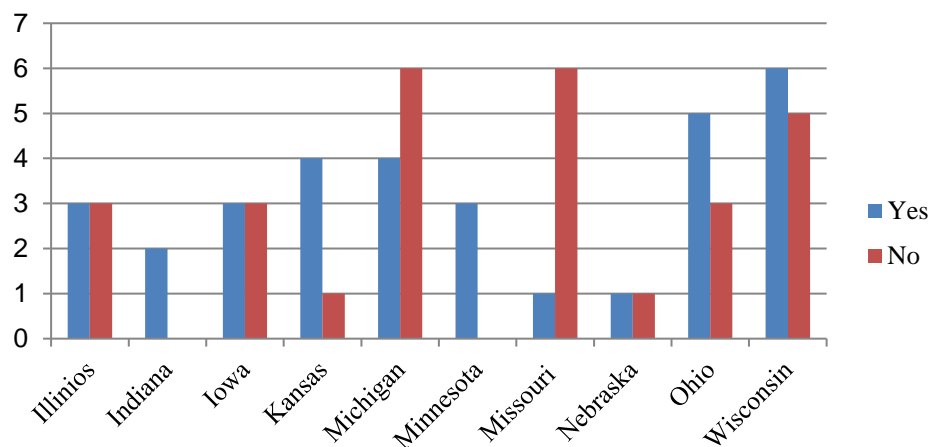


Figure 1. Colleges by state implementing leadership education.

The second research question focused on what types of offered curriculum embed leadership in the identified technical programs. The survey results indicated that of the community colleges represented, 11 degrees, three certifications, zero minors, one certificate, one module, and 10 “other” types of curriculum are being offered in technical programs teaching leadership. The participants that stated “other” were given an option to write what they meant by “other.” Responses included “practicum,” “developing leadership skills,” and “effective team building for managers.”

**Qualitative Results.** 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. This resulted in 4 programs in the states of Illinois, Iowa, Kansas, and Michigan.

Prior to conducting the interviews, the program’s websites were reviewed. The four community college programs’ websites provided some information concerning their curriculum. Although none of the programs offered a course with the word “leadership” in the title, the programs were reviewed for leadership-oriented content. Leadership skills as identified in Northouse (2013) and Mumford, Campion, and Morges (2007) were used as key searches. These skills are grouped into the following categories: technical, human, and conceptual (Northouse, 2013) and cognitive, interpersonal, business, and strategic (Mumford, Campion, & Morges, 2007). This process yielded one course in each three of the four programs that appeared to contain leadership-oriented content. From the website search for the program in Michigan, it was not clear which, if any, of the courses in the program delivered leadership education.

Of the other three programs, the leadership content identified in a course called “Work Ethics” was offered in a program in Kansas. 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.” Another course in a program in Illinois is called “Labor Management Development” and specifically identifies leadership skills such as motivation, planning, communication, and conflict resolution. And the program in Iowa offered a course called “Changes and Choices.” Based on the course description, 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...”

After multiple attempts to contact participants from these four programs for interviews, participants from two of the community college programs were interviewed. Both interviewees were department chairs and in addition to participating in the semi-structured interview, provided course syllabi of the courses. Both interviewees indicated that their advisory committee had an impact on the development of their leadership courses. As one of the interviewees said, “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...” The program responded to these issues by creating a “leadership” course to teach their students skills to help them in the workplace. The other interviewee also stated their course was developed in response to their advisory board’s recommendation. This course emphasizes leadership much more explicitly as indicated by the course textbook, *Introduction to Leadership: Concepts and Practice* by Peter Northouse. The interviewee explained that they believed the leadership skills described in the book would help prepare their students for the workplace.

In terms of how leadership is taught in these courses, one of the interviewees discussed some of the instructional activities. The first activity the interviewee indicated was a chess game focusing on thought processes and strategies. For example, when playing chess an individual has to see all their options, understand which move to make, and thinking things out before making a move. The second activity described was called “We Care Teaming.” This activity is about how to get along in the workplace and how to relate to people. The other interviewee indicated the course that focuses on leadership is taught using a primarily lecture-based approach, along with a group project. The course content focuses on leadership skills such as motivation, communication, and conflict resolution using the Northouse book.

## Conclusions

The purpose of this research was to understand how community colleges are creating leadership education. According to the data in this research study, it appears that leadership education is an emerging area for community colleges but also one that is narrowly defined. With 54 percent of community colleges teaching leadership, it seems that several community colleges in the Midwest are incorporating a leadership dimension in service to the students’ preparation for the technical workplace. The leadership dimension appears to be encompassed by an overall emphasis on workplace readiness with communication and confidence being targeted aspects.

Not surprisingly, technical knowledge is the priority of the programs studied. For example, one of the interviewees stated; “to say we have leadership focus is kind of a secondary thing for us.” Related to this priority, the leadership skills identified in the interviews and

documents appear to be more about preparing the students for the workplace than for leadership roles. One of the interviewees stated that, “over time yes they do enter into leadership, on the job leadership roles,” however the focus was on educating their students in how they need to act in the workplace, like showing up on time and getting along with their boss. As one of the course descriptions stated, students would develop “skills required for success in the workplace with focus on the development of positive work habits and communication skills.”

Even with the priority on technical training and the emphasis on workplace readiness, technical programs in community colleges do include a leadership dimension. Both interviewees talked about communication and confidence as leadership-oriented outcomes their programs sought to develop. Communication skills were identified in the course syllabi that were provided as a learning outcome of the course and program. Confidence was an important factor as well. One of the interviewees indicated that they did not 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. The other interviewee added that they hoped their “students have enough confidence in themselves” to be able to “step up to the plate when those opportunities arrived.”

### **Implications**

Based on the findings and conclusions from this study, it seems that there is a need for technical programs to teach the technician as a whole person; not just for students to have the technical knowledge, but leadership skills as well. As one of the interviewees indicated, their industry partners were satisfied with the students’ technical ability, but not satisfied with the students’ workplace readiness or leadership ability. Leadership education may help address this need preparing technicians that can work well with people, have better communication skills, the ability to motivate, and the confidence to further develop into technology leaders. As Watt (2003) outlined, effective leadership education should prepare leaders of the 21<sup>st</sup> century who are “able to skillfully communicate with people in order to lead effectively while promoting cooperation and mutual understanding among diverse people” (p. 14).

There needs to be “a balance between technical competency and leadership acumen” that is “necessary for modern technological firms” (Racine, 2015, p. 24). The two interviewees echoed this sentiment stating that it was a priority for their students to possess the technical knowledge. In order to accommodate a leadership dimension without sacrificing technical training, the “right” leadership skills need to be identified. There must be a focus on specific leadership skills such as what the interviewees described as important: communication skills and the development of confidence. These dimensions of leadership resonate with the findings of the Little-Wiles, Hackney, and Daugherty (2013) study, that found six characteristics of leadership important to technologists including: “(a) curiosity; (b) technical knowledge; (c) communication skills; (d) leading change; (e) open-mindedness; and (f) confidence” (p. 8).

Further research is needed to determine which leadership skills are needed for technologists. Community colleges are just but one avenue for technologists to be trained and educated. However, it appears to be a place of untapped potential for developing technology leaders. As Stephens and Beatty (2015) argued “leadership education should be accessible to

students early in their college career. Efforts should be made to enroll students who are particularly at risk of struggling or departing early from college” (p. 126). Community college students fit this description warranting further investigation. In terms of this study, only the Midwest region of the United States was included. Surveying all community colleges within the United States would give more opportunities to see how community colleges are implementing leadership education and which skills are deemed most important. The community college curriculum might further expand its existing leadership education to help to fill the leadership gap in the technical workforce.

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