

IDENTIFICATION AND DEVELOPMENT OF CRITICAL WORKFORCE SKILLS IN THE  
CHATTANOOGA REGION

By

John Peter Dorris

Approved:

---

James A. Tucker  
Professor-College of Health, Education, and  
Professional Studies  
(Chairperson)

---

Hinsdale Bernard  
Professor-College of Health, Education, and  
Professional Studies  
(Methodologist)

---

David Rausch  
Associate Professor-College of Health,  
Education, and Professional Studies  
(Committee Member)

---

John Schaerer  
Special Faculty  
(Committee Member)

---

Mary Tanner  
Dean of the College of Health, Education and  
Professional Studies

---

A. Jerald Ainsworth  
Dean of the Graduate School

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## ABSTRACT

The purpose of this quantitative study was to identify the workforce skills perceived to be critical in the Chattanooga region, and to explore how colleges and businesses can partner to effectively develop those skills. Data from a June 2011 survey of workforce stakeholders in the Chattanooga region were analyzed. The 78 survey respondents represent a cross-section of industries and organization sizes. The methodology used to identify critical workforce skills was designed to select skills considered to be important regardless of factors such as industry type or organization size. Active listening, leadership, critical thinking, customer focus, oral communication, and teamwork/collaboration were found to be critical workforce skills. Due to the perception that current workforce skills in active listening, leadership, critical thinking, and customer focus were relatively inadequate, these skills were identified as urgently critical workforce skills.

The study is intended to inform efforts to build college-business partnerships that can effectively develop important workforce skills in the Chattanooga region. For each of the skills identified as critical, the perceived skill level of experienced employees was compared to the perceived skill level of recent college graduates. The uniqueness of this study lies in the fact that it connects research on important workforce skills to the perceived responsibility and effectiveness of colleges in developing those skills. Furthermore, business practices and perceptions regarding training methods were explored in the survey, as well as preferences for various forms of college-business interaction.

The urgently critical skills are discussed within the framework of a social cognitive theory of learning. A particularly notable result of the study is that the confluence of learning theory and urgently critical skills provided a striking, and unexpectedly clear, direction regarding a leadership theory that could effectively guide development of college-business partnerships.

## DEDICATION

I would like to dedicate this dissertation to my wife, Bernadette Dorris. Without her sacrifice and support, completion of this dissertation and degree would not have been possible. I would also like to thank my parents, Jim and Charlotte Dorris, who have never failed to be positive role models for me, and from whom I continue to learn so much today. I am so grateful to see my children, Ted, John, and Danika, reflecting their character and their compassion for others.

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## LIST OF ABBREVIATIONS

CRS, Chattanooga Region Survey

SWOT, Strengths, Weaknesses, Opportunities, and Threats

# CHAPTER 1

## INTRODUCTION

### **Introduction and Background to the Problem**

In the past three years, the Chattanooga, Tennessee region has experienced substantial growth in industry. Alstom Power, Amazon, Volkswagen, Wacker Chemical, and Westinghouse have all recently located facilities in the Chattanooga region. Business Facilities (2010) has even ranked Chattanooga, TN as the number one metropolitan area for economic growth potential in the United States. Such growth promises an even higher demand for a more skilled workforce in the near future. An educational infrastructure that can effectively meet the demand for a skilled workforce is an important part of the competitive strategy used to attract even more businesses to the area. An article in *Industry Week* by Alpern (2010) alludes to the effectiveness of such a strategy: “Luring Volkswagen and Alstom wasn’t easy. Aggressive incentive packages, plus inexpensive land and easy access to river and Interstate highway systems help, for sure. But so does a cooperative relationship between industry and the local educational system” (para. 5).

### **Statement of the Problem**

In a time of high unemployment, the projected economic growth in the Chattanooga region indicates great potential for the area residents. However, without an effective mechanism for developing the workforce skills of current residents, the demand for a skilled workforce will be satisfied by an influx of new residents already possessing the required skills. While the addition of new residents adds to the vitality of the region and provides other positive benefits,

the missed job opportunities experienced by some current residents will undoubtedly dampen the positive impact of the projected job growth.

### **Purpose of the Study**

The goal of this study is to provide research-based and theory-based insight into workforce skills issues in order to help build a more effective workforce-development infrastructure for the Chattanooga region. According to Corporate Voices for Working Families, The Conference Board, the Partnership for 21st Century Skills, and the Society for Human Resource Management (2006a), college graduates are substantially more prepared for work than high school graduates. Therefore, the specific purpose of this study is to identify critical workforce skills in the Chattanooga region and to identify opportunities for college-business partnerships to develop those skills.

### **Research Questions**

The purpose of this exploratory study will be achieved by answering the following research questions.

Research Question 1. What are considered to be the urgently critical workforce skills in the Chattanooga region?

Research Question 2. How can colleges and businesses partner to effectively develop critical workforce skills in the Chattanooga region?

### **Conceptual Framework**

This study is based on a conceptual framework defined by learning theory and leadership theory. As described below, learning theory provides validation of the importance of Research Question 1, and leadership theory suggests the value of Research Question 2.



Social cognitive theory, as developed by Bandura (1989), describes the reciprocal links between personal, behavioral, and environmental factors as components of the learning process. The importance of Research Question 1 is validated by the social cognitive theory of learning, which recognizes the importance of perception (a personal factor). Based on the importance of perception, the first research question seeks only to determine which workforce skills are *perceived* to be most important.

Further validation of the importance of Research Question 1 is provided by a key concept in social cognitive theory called *self-efficacy*. Perceived self-efficacy is defined as “people's beliefs about their capabilities to produce effects” (Bandura, 1994, Glossary section, para. 1).

Self-efficacy can also impact an institution's performance. A college that is fully engaged with its community, and understands which skills are considered to be important, is better able to develop a curriculum that is relevant to its community and the world with which it interacts. The faculty, knowing that the curriculum is more relevant to the community, would seem likely to have more confidence in their ability to positively impact student learning because of the expected high level of student interest in the curriculum. According to Bandura (1993), “faculties' beliefs in their collective instructional efficacy contribute significantly to their schools' level of academic achievement” (abstract). Thus, a college faculty/staff's increased awareness of the skills valued by the community can also contribute to a college-wide positive impact on the student academic performance and learning experience.

As has been suggested by learning theory, a college that is fully engaged with its community is likely to be more capable of providing an enriched learning experience and, thus, one that could better develop workforce skills. However, improving the institution's capability to more effectively develop workforce skills does not, in itself, achieve the goal of improving

workforce skills. In order for this research to contribute to achieving this goal, leadership must be exercised to animate that capability.

Due to their recognized role in educating the community, colleges are in a position to take a leadership role to engage the community in the effort to develop workforce skills. The potential value of colleges engaging the community for that purpose is quite evident and has been described above. However, the type of engagement that would produce the most positive results is less obvious, and one partially dependent on the unique context provided by the community in which the college is located. Here is where leadership theory may be particularly instructive to institutions of higher education.

Leadership theory that emphasizes the importance of relationships and collaboration provides the impetus for Research Question 2. Dubrin (2010), recognizing that there are many definitions of leadership, defines it as “interpersonal influence, directed through communication toward goal attainment” (p. 3). While Dubrin’s definition implies that relationships play an important role in leadership, Kouzes and Posner (2002) leave no doubt about its role, as they state that “leadership is a relationship between those who aspire to lead and those who choose to follow” (p. 20). Rost (1995), in his discussion of leadership and ethics, clearly recognizes the critical role of relationships in leadership, but he is careful to avoid confining leadership relationships to a superior-subordinate context. Rost (1995) claims that “leadership is not what leaders do but what leaders and collaborators do together – the interaction that goes on among them as they propose significant changes that reflect their mutual purposes” (para. 10).

In defining leadership, Rost (1995) refers to collaboration regarding a mutual purpose. Having a mutual purpose would suggest some form of partnership. Thus, if colleges are to exercise leadership as they collaborate with the community to develop workforce skills, the

college-community relationship likely to be most productive would seem to be a partnership. According to Block (1993), “partnership means each of us at every level is responsible for defining vision and values. Purpose gets defined through dialogue” (p. 29). The value of Research Question 2 lies in the potential of its findings to inform this type of dialogue between colleges and the community as they form partnerships to more effectively develop workforce skills.

### **Rationale for the Study**

According to Carnevale, Smith, and Strohl (2010), 63 percent of job openings in 2018 are expected to require at least some college education. Therefore, in the effort to develop workforce skills, colleges will play an increasingly critical role.

The Chattanooga region’s job-growth potential (including its resurgence in manufacturing) and the emerging emphasis on the attainment of a postsecondary degree are conditions that, taken together, present an enormous opportunity for the region to achieve sustainable economic growth and prosperity. However, the National Association of Manufacturers (2005) warns that “educators must produce graduates familiar with the world of work and the skills needed to be effective in it. Business/education collaborations are critical to help familiarize the teaching and counseling professions with the needs of business” (p. 23). Therefore, commensurate with the Chattanooga region’s enormous opportunity for growth is the challenge for the region’s businesses and educational institutions to partner in developing a workforce that can support such growth.

In order to most effectively identify and develop workforce skills in a specific community, one must consider the workforce-skills perceptions of that particular community. Consideration of the local perspective provides a much richer context in which issues related to

workforce skills and education can be examined. Therefore, a survey of the local workforce in the Chattanooga region will provide critical input to help answer the research questions posed in this study.

### **Methodology for the Study**

The Chattanooga Region Survey (CRS) is an extensive workforce skills survey of the Chattanooga region that was conducted in June 2011. A major focus of the study was the comparison of the workforce skill perspective in the Chattanooga region with a national perspective. However, this survey provides secondary data that have not been analyzed and provide a basis for further study.

This study follows a quantitative methodology. Statistical analysis was used to determine the urgently critical workforce skills in the Chattanooga region, as perceived by members of the workforce (Research Question 1). In answering Research Question 2 (related to college-business partnerships for developing workforce skills), quantitative analysis was used to assess respondent perceptions regarding the role and impact of colleges related to workforce development, college-business interaction regarding development of workforce skills, and training method effectiveness. Responses to an open-ended, qualitative survey question were also used as input to address Research Question 2. However, categories of responses to this question were constructed for the purpose of generating frequencies.

### **Significance of the Study**

Research by Chin and Benne (1976/2005) suggests that a weak (or non-existent) link between education research and education practice can often result in research findings that have relatively little impact, particularly on actual instruction. The significance of this study lies in

the fact that it connects research on important workforce skills in the Chattanooga region to potential college-business partnerships that can directly determine the practice of developing those skills. Additionally, the consideration of learning theory and leadership theory as college-business partnership opportunities are identified, not only bridges the gap between research and practice, but increases the likelihood that such practices will be effective.

### **Definition of Terms**

- (1) *Business*. Merriam-Webster Dictionary defines business as “a commercial or sometimes an industrial enterprise” (business, 2011). However, for this study, a broader view of business will be taken to include any enterprise, regardless of its legal designation as for-profit, nonprofit, religious, or social.
- (2) *Chattanooga region*. The Chattanooga region is defined to include counties in Southeast Tennessee and North Georgia that are adjacent to Hamilton County (the county in which Chattanooga is located). However, 73 (or 93.6%) of the 78 respondents were employed by organizations in Hamilton County. The five respondents who were employed outside of Hamilton County were included in the sample because the Chattanooga region included their county, or their work history and/or location indicated familiarity with the Chattanooga region.
- (3) *Enterprise*. Merriam-Webster Dictionary defines enterprise to be “a unit of economic organization or activity; *especially* : a business organization” (enterprise, 2011). A second definition given by Merriam-Webster Dictionary is that an enterprise is “a systematic purposeful activity” (enterprise, 2011). The combination of these two definitions of enterprise captures this study’s use of the term.

- (4) *Learning organization*. An organization in which everyone is engaged in identifying and solving problems, enabling the organization to continuously experiment, improve, and increase its capability” (Daft, 2003, p. 55).
- (5) *Snowball sampling*. According to Babbie (2001), snowball sampling is “A nonprobability sampling method often employed in field research whereby each person interviewed may be asked to suggest additional people for interviewing” (p. G10).
- (6) *Skill gap*. The difference between the necessary level of competence in a skill and the current level of competence in that skill. This term will be used when the current level of competence in a skill is lower than the necessary level of competence in that skill.
- (7) *Workforce*. Merriam-Webster Learner’s Dictionary defines workforce as “the number of people in a country or area who are available for work” (workforce, 2011).
- (8) *Workforce development*. According to Jacobs (2002), workforce development is “the coordination of school, company, and governmental policies and programs such that as a collective they enable individuals the opportunity to realize a sustainable livelihood and organizations to achieve exemplary goals, consistent with the history, culture, and goals of the societal context” (p.13).

### **Delimitations of the Study**

One delimiting factor regarding the CRS is that the respondents are currently active in the workforce in the Chattanooga region. Therefore, this study does not include the perspective of people with no recent workforce experience.

Another delimiting factor is the level of respondent experience in the workforce. The median number of years the respondents have been in the workforce is 25, with four years being the least number of years a respondent has been in the workforce. Thus, the perspective of new entrants to the workforce is not represented in this study.

According to the American Community Survey (2010), the percentage of the population 25 and over in Hamilton County who have at least an associate's degree or higher is 34.1%. However, 87.2% of the survey respondents have at least an associate's degree. Therefore, the sample represents a disproportionately high percentage of the population with college experience. This lack of diversity in education level of the survey respondents may, thus, limit conclusions to a specific minimum education level.

While a high percentage of respondents were employed by organizations in Hamilton County, the reality of worker mobility suggests that there is still sufficient awareness of workforce issues beyond Hamilton County. According to the U.S. Census Bureau (2000), of the 182,788 people who worked in Hamilton County in 2000, 38,723 were residents of other counties in the Chattanooga region, and another 10,421 resided outside of the Chattanooga region. Furthermore, the American Community Survey (2009) estimates that 19,657 Hamilton County residents were living in another county or another state one year before. Nevertheless, the fact that a large majority of CRS respondents were employed in Hamilton County presents a delimiting factor to the study, suggesting that inferences made from the data would be most applicable to Hamilton County.

A final delimitation relates to the discussion of instructional methods. While specific instructional methodologies may be mentioned in this paper, the scope of this paper does not include determining which specific methodologies are most effective in developing workforce

skills. Any suggestions made regarding the use of specific instructional methodologies will only be based on their compatibility with the perceptions of the local community.

### **Limitations of the Study**

An important limitation of the CRS is that the workforce skills ratings and skills competence ratings were based on respondent perceptions, as opposed to one formal assessment being applied by all respondents. Therefore, when considering, for example, responses regarding the importance of various skills, one must assume that each respondent considered similar criteria when assessing the impact each skill has on the organization. Furthermore, regarding the rating of workforce skill competence, it is important to note that responses were based on respondent perceptions, not on a specific assessment method designed to objectively assess competence level.

Another limitation of the study relates to questions regarding the perceived skill level of employees with varying lengths of employment. Respondents were asked to rate the skill level of employees who were recently hired and those who have more than one year experience with their organization. The ability of respondents to correctly attribute the perceived skill level to the appropriate group of employees (newly hired or longer service) is limited by the respondent's awareness of how long the other employees have been with the organization.

A final limitation relates to respondent awareness. Depending on several organization-dependent factors, including size, culture, and management structure, the respondent's position within the organization could have limited his or her awareness to the context provided only by his or her department. Respondents in an upper management position, for example, would likely have had a broader, organizational context to consider when responding to the survey questions.



## **Summary and Dissertation Outline**

The purpose of this dissertation is to identify critical workforce skills in the Chattanooga region. Issues including perceived skills gaps and the preferred training methods to fill those gaps were investigated, as well as the potential role that business-college partnerships can play in workforce development.

Chapter Two consists of a review of literature related to workforce issues. The literature includes surveys regarding skills gaps, workforce development, and the importance of various workforce skills. The reviewed research literature includes both national and local perspectives.

This study involves new research primarily consisting of analyzing data collected in the CRS, which is a survey of workforce participants from a variety of industries and job levels in the Chattanooga region. Chapter Three describes the methodology that was used to conduct this survey. Furthermore, Chapter Three provides an overview of the methodology that will be used in analyzing the survey data to answer the research questions.

Chapter Four involves analyzing the survey data, according to the described methodology, and stating results of the analysis. Results include a list of workforce skills deemed to be of critical importance to the Chattanooga region. Also, survey results pertaining to training methods and potential college-business interaction to develop workforce skills are included in the findings.

Chapter Five includes a synthesis of the survey findings and applicable learning theory and leadership theory in order to summarize the results of the study. This chapter concludes the study by making additional observations related to the insight gained from the analysis and synthesis. Issues recommended for further study are also included.

## **CHAPTER 2**

### **REVIEW OF THE LITERATURE**

In order to understand how a college education can more effectively develop workforce skills, one must first identify what skills are valued by employers, which of those skills are critical, and which of those skills are most lacking in the existing workforce. A review of workforce literature will shed light on these issues.

A general review of workforce issues was performed to provide a better understanding of the importance and impact of workforce skills. A review of workforce literature was conducted to determine what workforce skills are considered to be critical. Research conducted by a variety of organizations including a university, a consulting firm, and a professional organization, will be considered in order to provide an overall national perspective on workforce skills issues. Related surveys and reports focused on various regions or communities across the country will be considered as well.

#### **Impact and Importance of Workforce Skills**

Workforce skills provide a critical foundation for the success of an employee, a business, a community, and a nation. With an adequate education system to develop workforce skills, a nation and its communities, businesses, and citizens can successfully compete in the global economy. However, due to current and projected educational attainment, the ability of the U.S. to compete in the future global economy is at risk. The National Commission on Adult Literacy (2008) states that

The U.S. is the only country among 30 OECD [Organization for Economic Cooperation and Development] free-market countries where the current generation is less well educated than the previous one. The U.S. is also losing ground in international comparisons in terms of high school diplomas and college degrees awarded. Further, while we score as one of the highest countries in numbers of well educated people we also score near the top in the largest number of people at the lowest education levels—a form of inequality that affects all Americans. (p. v)

### **Impact of Workforce Skills on Disadvantaged and Low-Income Groups**

The inequality suggested by the National Commission on Adult Literacy is illustrated clearly by Holzer's (2009) report stating that

A consensus has developed among economists and policy analysts on the increased importance that workforce skills play in explaining the labor market problems of the disadvantaged. The lack of skills and educational credentials among disadvantaged racial and ethnic minorities and the poor contributes to their low employment and earnings and inhibits their ability to advance in the labor market. (p. 62)

The inability to advance in employment due to a lack of workforce skills and educational attainment, and the resulting likelihood of a continued life of poverty, underscores on a very personal level, the importance of workforce skills and educational attainment. In fact, according to The Council for Adult and Experiential Learning and The National Center for Higher Education Management Systems (2008), the lifetime earnings (By Age 65) of a high school graduate is estimated to be \$1,204,670, whereas someone with a Bachelor's Degree is estimated to have lifetime earnings (By Age 65) of \$2,077,520. These estimates help explain the 2006 poverty data that shows 31.4 percent of households headed by someone with less than a high school education live in poverty, while 14.8 percent of households headed by a high school graduate live in poverty and only 3.5 percent of households headed by a college graduate live in poverty (Meyer & Wallace, 2009).

Given the projected higher demand for a more educated workforce, the income differential due to education level is likely to contribute to an even greater income inequality in

the future. According to the U.S. Census Bureau, “in 2010, 46.2 million people were in poverty, up from 43.6 million in 2009—the fourth consecutive annual increase in the number of people in poverty” (U.S. Census Bureau, 2011a, Highlights section, para. 1). The increase in the number of people living in poverty indicates that the inequality impact is already being realized.

Therefore, there is a sense of urgency to more effectively develop workforce skills. Doing so, will not only provide people living in poverty more opportunities to earn a living wage, but will also benefit businesses by providing a more productive workforce.

### **Value of Workforce Skills to Businesses**

Corporate executives are clearly aware of the importance of workforce skills. Corporate Voices for Working Families (2010) states that “Ninety-seven percent of surveyed business leaders agree that their organization considers workforce readiness a critical business imperative” (p. 1). According to this report, “Business leaders are deeply concerned about their future workforce and the cost of providing training to a generation of workers they view as ill-prepared for the demands on the job” (Corporate Voices for Working Families, 2010, p. 1). Therefore, business leaders are also acutely aware of the challenges of developing a skilled workforce.

Recognizing the value of a skilled workforce, employers are increasingly focused on hiring employees with educational credentials, such as a postsecondary degree, in order to provide assurance that their employees have the necessary skills. A research report by Civic Enterprises and Corporate Voices for Working Families (2011) states that

More than three in four business leaders believe that increasing post-secondary completion will have an extremely or very positive impact on the U.S. economy (79 percent) and workforce productivity (76 percent). They also recognize the potential to affect both the success of their company (75 percent) and their company's ability to hire and retain employees with the necessary skills and knowledge (75 percent). (p. 4)

An article by Sewall (2010) in *The Chronicle of Higher Education* states that “of the openings projected in 2018, the center [Georgetown University Center on Education and the Workforce] predicts that 63 percent will require workers with at least some college education. Today, about 59 percent of jobs require some postsecondary education” (para. 2).

The wisdom of employers focusing on hiring employees who attain a higher educational level is validated by research showing the positive impact of increasing the educational level of the workforce. A study by Black and Lynch (1996) found that increasing the educational level of employees by one year can increase productivity by 8.5% in manufacturing industries and increase productivity by 12.7% in non-manufacturing industries. An increased level of education is also associated with a healthier lifestyle and a higher rate of coverage by employer-provided health insurance (College Board Advocacy & Policy Center, 2010). Just considering the potential positive impact of a healthier lifestyle on productivity suggests one of the many positive benefits of a higher educational level. According to Davis, Collins, Doty, Ho, and Holmgren (2005), “labor time lost due to health reasons represents lost economic output totaling \$260 billion per year” (p. 1).

### **Value of Workforce Skills to Society**

Society, as a whole, benefits from an increased level of education as well. A higher level of education is associated with a higher rate of employment, higher job satisfaction, higher participation in pension plans, and higher participation in civic activities such as voting and volunteerism (College Board Advocacy & Policy Center, 2010). The impact on taxpayer funding of social-support programs is also quite positive. According to the College Board Advocacy & Policy Center (2010), “estimates of the average lifetime savings in taxpayer spending on social support programs associated with U.S.-born individuals earning four-year

degrees instead of ending their education after high school range from \$32,600 for white women to \$108,700 for black men” (p. 21).

### **Demand for College Graduates**

In the midst of strong evidence of the benefits of increasing educational attainment and developing workforce skills, there are clear indications that the U.S. is not just falling behind internationally regarding educational attainment, but by domestic standards as well. The demand in the U.S. for college graduates is expected to increase significantly over the next few years. However, the current rate at which members of the 18-to-24-year-old age-group are completing their postsecondary education, and the current percentage of the workforce with postsecondary degrees, will not be sufficient to meet this demand. Changing demographics are also contributing to the projected shortage of college graduates. In 2009, the Latino population (one of the fastest growing segments of the population) attained an associate’s degree or higher at the rate of only 19.2 percent, which is less than half the overall national rate (College Board Advocacy & Policy Center, 2011). Furthermore, retiring baby boomers are not being replaced fast enough with a younger, skilled workforce. The National Commission on Adult Literacy Report (2008) states that

As these ‘baby boomers’ leave the workforce, their places are taken by the smaller cohort of workers born in the mid-to-late 1960s and early 1970s. As a result, the U.S. workforce is increasing more slowly and, without intervention, is likely to become less educated on average. (p. vi)

### **Intervention to Increase the Number of College Graduates**

At the time of my study, as it happens, a national effort has been initiated to prepare the workforce of tomorrow by increasing the percentage of the workforce with a postsecondary degree. CEOs for Cities has partnered with FutureWorks to launch the National Talent Dividend

Network. According to CEOs for Cities (2011a), “this network composed of cross-sector teams from 23 cities meets twice annually for peer-to-peer conversations on strategies, successes and challenges in increasing college attainment rates” (para. 3).

The Talent Dividend Network is focused on the goal of increasing the number of residents in a community who have a postsecondary degree. Research cited by CEOs for Cities (2011a) states that

Increasing educational attainment, measured by raising the four-year college attainment rate by one percentage point in each of the 51 largest metropolitan areas, would be associated with an increase in per capita income of \$124 billion per year for the nation. (para. 2)

Associated with this effort is a Talent Dividend Prize, which is a competition to promote an increase in the number of postsecondary graduates in communities across the nation.

Specifically, “the Talent Dividend Prize is a \$1 million prize to be awarded to the city that exhibits the greatest increase in the number of post secondary degrees granted per one thousand population over a three-year period” (CEOs for Cities, 2011b, para. 1). Chattanooga, TN is one of the 57 cities competing for this award.

The Complete College America Alliance of States (formed by Complete College America) is also focused on increasing the education level across the nation. The alliance is “a national program aimed at helping institutions meet President Obama's goal of having the world's best-educated adult population by 2020” (Nelson, 2010, para. 1). However, the Complete College America Alliance of States is focused on increasing the college completion rate, whereas the Talent Dividend Initiative is focused on increasing the number of college graduates. Even though these are different metrics, the goal of both efforts is to increase the number of people with college degrees, regardless of specific major in college degree.

While the Talent Dividend Initiative and the Complete College America efforts focus on increasing the overall number of college graduates, other efforts, such as the Business-Higher Education Forum's STEM Education & Modeling Project, are focused on specific disciplines and careers. The Business-Higher Education Forum (2010) project is

designed to help increase the number of students who pursue majors and careers in the fields of science, technology, engineering, and mathematics (the disciplines collectively known as STEM). The project's impetus is the organization's Securing America's Leadership in STEM Initiative, launched in 2005 with the goal of doubling by 2015 the number of U.S. students who graduate in STEM fields. (p. 1)

### **Impact of College Education on Workforce Skills**

Raising the percentage of people who have a postsecondary degree will certainly have a positive impact by increasing the pool of job candidates who meet an employer's requirement of higher education. However, does a workforce composed of a higher percentage of postsecondary graduates necessarily translate into a more skilled workforce? Does getting a college education develop the workforce skills needed by businesses in the community? A report by Corporate Voices for Working Families, The Conference Board, the Partnership for 21st Century Skills, and the Society for Human Resource Management (2006a) found that "over 40 percent (42.4 percent) of employer respondents rate new entrants with a high school diploma as 'deficient' in their *Overall Preparation* for the entry-level jobs they typically fill" (p. 13), whereas "only a small percentage of employer respondents (10.8 percent and 8.7 percent, respectively) rates two-year and four-year college graduates as 'deficient' in their *Overall Preparation* for work" (p. 14). Research provides evidence of the positive impact of educational level on workforce skills, so the general answer to both of these questions is "yes."



## **Alignment of College Curriculum and Instruction with Needed Workforce Skills**

One important consideration prompted by the above two questions is whether or not the skills gained by a postsecondary graduate are adequately aligned with the workforce skills needed by employers. The same report providing evidence that a college education has a positive impact on workforce skills also indicates, just as clearly, that there is much room for improvement in how colleges prepare graduates for the workforce. The report by the Corporate Voices for Working Families, the Conference Board, the Partnership for 21st Century Skills, and the Society for Human Resource Management (2006a) states that “a small percentage [of employer respondents] reports that two-year and four-year college-educated entrants are ‘excellent’ in terms of their *Overall Preparation* (10.3 percent and 23.9 percent, respectively)” (p. 14). Thus, perhaps the more pertinent question to ask is “Are communities across the nation taking full advantage of the emphasis on a postsecondary education in such a way that effectively and efficiently develops workforce skills?”

The Lumina Foundation has also focused on a similar topic involving college education and workforce skills. In its Winter 2011 issue of *Focus*, Jamie Merisotis, President and CEO of the Lumina Foundation, states that

It won't be enough to increase the proportion of degree-holding Americans to 60 percent; we must also find ways to ensure the *quality* of those degrees. And that means we must confront some important questions: What exactly are our students learning — and what *should* they be learning? What knowledge, skills and other competencies must they have so they can thrive? (Lumina Foundation, 2011, para. 4-5)

Such questions look well beyond the simple conclusion that a college degree improves workforce skills. Similarly, businesses, colleges, and communities must take a deeper look into what specific skills and competencies are needed, so that efforts to produce more college graduates maximize the positive impact on workforce skills.

## **Current Workforce Skills – Perceptions and Skills Gaps**

The review of literature regarding workforce skills, training, and education will also focus on how adequate the general level of workforce skills is currently perceived to be. Literature that discusses specific skills will then be reviewed. The skill-specific section of the literature review will consist of the following framing questions: What skills have been identified by businesses and other community stakeholders as most important? What skills are most lacking in the current workforce? The convergence of responses to these two questions helps prioritize the training needs of organizations. Such information also provides a national context for discussion of the CRS results discussed later in this paper. Due to the vital link between workforce skills and education, and the resulting need for collaboration between colleges and businesses, the literature review also includes a review of research regarding employer perceptions of the level of workforce skills of college graduates.

### **General Perception of Workforce Skills.**

Business perception of the adequacy of workforce skills, in a general sense, will first be considered to provide a context for a more targeted discussion regarding specific skills and skills gaps. According to Partnership for 21<sup>st</sup> Century Skills (2006), “a new survey of leaders from a consortium of business research organizations finds the incoming generation sorely lacking in much needed workplace skills — both basic academic and more advanced ‘applied’ skills” (p. 1). Furthermore, the Accenture High Performance Workforce Study (2010) found that “Only 14 percent of US respondents indicated their workforce is extremely well prepared to adapt to and manage change during periods of economic uncertainty while over 40 percent indicated that their workforce is not prepared” (p. 15).

Other studies, including the Corporate Voices for Working Families (2010), indicate that today's schools are not providing graduates with adequate skills for the workforce. A joint report by Corporate Voices for Working Families, The Conference Board, the Partnership for 21st Century Skills, and the Society for Human Resource Management (2006b) states that "less than a quarter of employers – only 23.9 percent – report that new entrants with four-year college degrees have 'excellent' basic knowledge and applied skills, and important deficiencies exist among entrants at every level" (p. 2).

In 2010, Ready Indiana conducted an employer workforce skills survey. In their analysis of the survey results, they state that "a significantly higher percentage of employers report skill deficits as problematic, a 75 percent increase over 2009" (p. 1). A report by the National Association of Manufacturers (2005) emphasizes, in a broader context, the impact of inadequate workforce skills by stating that

Clearly, this situation calls for urgent action by both public and private stakeholders. If our country is to remain competitive, the issues of education and training reform now must be given at least as much focus as top business concerns of trade, tax, energy, and regulatory reform. (p. 3)

The sources cited above indicate that businesses have a general concern about the current level of workforce skills and they are also concerned about the skills of new college graduates. Against this background, literature will be reviewed to gain a better understanding of the specific skills considered important from a business perspective.

### **Perception of Specific Workforce Skills Importance and Adequacy**

A survey conducted by the University of Missouri – St. Louis College of Business Administration (UMSL) (2010) found the skills shown here in Table 1 to be critical business

skills. There were 317 respondents to the UMSL survey, which was administered in January 2010.

Table 1 Top ten critical skills in business necessary to achieve high individual performances and organizational goals (as identified by University of Missouri-St. Louis Skills Gap Report)

Ranking	Skill
1	Active Listening
2	Customer Orientation
3	Critical/Analytical Thinking
4	Oral Communications
5	Time Management
6	Written Communications
7	Teamwork/Collaboration
8	Prioritization, Focus
9	Decision Making
10	Leadership
	Execution <sup>a</sup>
	Data Analysis <sup>a</sup>
	Change Management <sup>a</sup>

<sup>a</sup> Additional skills identified as critical in 2008 survey but not identified as critical in 2010 survey

The UMSL study surveyed human resource professionals who graduated from the UMSL College of Business Administration. The report states, however, that “the results are representative for other populations” (University of Missouri – St. Louis College of Business Administration, 2010, p. 14). The UMSL study results are consistent with an American Management Association (AMA) (2010) survey of managers and executives which identified critical thinking, communication, collaboration, and creativity to be critical workforce skills. A 2008 survey of 217 employers conducted jointly by The American Society for Training and

Development, The Conference Board, Corporate Voices for Working Families, and The Society for Human Resource Management provides evidence to corroborate the findings of the UMSL and AMA surveys. The report states that

More than 40 percent of those surveyed indicated a ‘high need’ for programs in critical thinking but were not offering such a program. And nearly 70 percent indicated a ‘high need’ for programs to foster skills in creativity but were not providing these programs. (Conference Board, 2009, p. 2)

The AMA study refers to what it calls the Four Cs (critical thinking, communication, collaboration, and creativity) as becoming “more important to organizations in the future” (American Management Association, 2010, p. 2). While this list of four skill-areas may need to have more precise operational definitions specified before developing a specific training program, these terms effectively capture and characterize critical workforce skills, at least from a national perspective.

A Ready Indiana (2010) survey provides much evidence to support the AMA study by stating that “applied skills such as communication, problem solving, creativity and leadership are needed by 77 percent of employers...” (p. 9). The Ready Indiana report concludes that “applied skills such as communication skills and problem solving are the competencies most needed and also those most lacking in employees” (p. 1). Other employer surveys and research reports specify communication skills and problem solving as being very important (Charleston Metro Chamber of Commerce, 2008; Alliance for Education, Chaffey College, Crafton Hills College, & San Bernardino County, 2005; Washington State Workforce Training and Education Coordinating Board, 2006). A survey by the North Carolina Department of Labor (2006) reports that one of the most likely reasons a job applicant is rejected, is poor communication skills. Critical thinking skills and/or teamwork skills were also frequently identified as important in several workforce skills surveys (Ready Indiana, 2010; Charleston Metro Chamber of

Commerce, 2008; Alliance for Education, Chaffey College, Crafton Hills College, & San Bernardino County, 2005; Washington State Workforce Training and Education Coordinating Board, 2006; Corporate Voices for Working Families, The Conference Board, the Partnership for 21st Century Skills, & the Society for Human Resource Management, 2006a).

Before continuing the review of other literature and other workforce skills issues, a comment must be made about how the surveys and reports referred to critical thinking. The Charleston Metro Chamber of Commerce (2008) survey bundled critical thinking and problem solving into one skill referred to as *critical thinking/problem-solving skills*. The UMSL study included *critical/analytical thinking* as one of its skills. Other surveys, however, specified critical thinking as a distinct skill separate from problem solving or analytical thinking. The variety of ways that critical thinking is represented or described may suggest the need for a more precisely defined construct or a more commonly understood view of what constitutes critical thinking.

The fact that critical thinking enters the workforce skills conversation from a variety of perspectives (via a variety of category names in the surveys) may, however, reveal a deeper truth; that component activities often associated with critical thinking (questioning assumptions, becoming aware of issue context and perceptions, and applying logic and reasoning) may become so ingrained in one's cognitive processes that such activities are subsumed by more observable activities, and thus not as easily recognized or articulated. Such a notion is best described by Schon (1983), who states that "skillful action often reveals a 'knowing more than we can say'" (p. 51). Such a hypothesis suggests that the level of importance and impact of critical thinking may be greater than is explicitly stated or articulated in workforce surveys and research.

Regarding workforce skills of recently hired college graduates, a survey of 104 Silicon Valley employers concluded that “employers were less than satisfied with overall communication skills of their new hires and recommended that students receive more training in both oral communication and written communication skills.” (Stevens, 2005, Abstract, para. 3). A joint study by Corporate Voices for Working Families, The Conference Board, the Partnership for 21st Century Skills, and the Society for Human Resource Management (2006a) also finds communication skills to be lacking in college graduates. The report states that

Nearly half the employer respondents (46.4 percent) report that two-year college graduates are “deficient” in basic *Writing in English*; over a quarter (26.2 percent) rate four-year college graduates “deficient” in basic *Writing in English*. And when asked about applied skills, almost half of the employer respondents report “deficiencies” in *Written Communications* among two-year college graduates (47.3 percent), while over a quarter (27.8 percent) report this as a “deficiency” among four-year college graduates. (p. 38)

### **Importance of Local Context When Developing Workforce Skills**

The most effective approach to the identification and development of workforce skills must be rooted in the current reality of the community of interest. Consideration of the local perspective provides a much richer context in which issues related to workforce skills and education can be examined. For example, Hamilton County (the county in which Chattanooga, TN is located) has had a high incidence of low birth-weight infants. The research below illustrates how even this one issue might be particularly pertinent to the discussion of workforce skills and education in the Chattanooga region.

According to Conley & Bennett (2000), “A low-birth-weight child is substantially less likely to graduate from high school by 19 years of age, with the probability of graduation reduced by 74 percent, as compared with his or her siblings” (p. 464). Low birth-weight females are more likely to have low birth-weight infants (Wang, Zuckerman, Coffman, & Corwin, 1995).

Thus, as long as the low birth-weight rate remains high, the Chattanooga community will be more likely to experience additional challenges in efforts to increase the high school graduation rate and the rate of college enrollment and completion. Furthermore, according to the Tennessee Offices of Research and Education Accountability (2006), “initial hospitalizations for low birth weight infants in Hamilton County cost \$11 million in 2001” (p. 19). Therefore, for social and economic reasons, the Chattanooga community may benefit substantially from effective efforts to break the cycle of a high rate of low birth-weight infants.

An important part of breaking this cycle is increasing the number of college graduates in the region. According to the College Board (2010), “overall, mothers with only a high school education are 31% more likely than mothers with a bachelor’s degree or higher (8.9% vs. 6.8%) to give birth to babies weighing less than 5.5 pounds” (p. 30). As a consequence of the high rate of low birth-weight infants in the Chattanooga region and its latent effect on, and link to, education, any strategy to improve the education level in the area would probably be strengthened by including this issue when seeking funding and community support.

### **Summary**

The workforce literature describes how important workforce skills are to the success of a nation and its communities. The literature indicates that inadequate workforce skills contribute to greater income disparity, lower business productivity, and higher financial costs to the general community. Evidence is provided showing the link between a college education and workforce skills. Efforts to increase the number of college graduates are described, along with the need for college curriculum alignment with workforce-skill needs. Concluding the literature review chapter is an illustration of the value of considering the local context when developing workforce skills.



## **CHAPTER 3**

### **METHODOLOGY**

#### **Introduction**

The methodology section describes the development and administration of the Chattanooga Region Survey (CRS), the survey from which this study was developed. The CRS provided secondary data that were not analyzed, and therefore provided a basis for further study. The unpublished study (to be referred to as the *preliminary study*) for which the CRS was originally conducted is incorporated in this study. However, the current study significantly extends the analysis beyond what was performed in the preliminary study and includes analysis of CRS data not previously examined. Therefore, after stating the research questions and briefly discussing the preliminary study and the CRS, the research design used for this study will be described.

#### **Research Questions**

Research Question 1. What are considered to be the urgently critical workforce skills in the Chattanooga region?

Research Question 2. How can colleges and businesses partner to effectively develop critical workforce skills in the Chattanooga region?

## **Background of the Preliminary Study and the CRS**

Analysis of the CRS data is a major part of this study and provides valuable input for answering the research questions. While such analysis is broader and more in-depth than the preliminary study, the preliminary study and the associated CRS data are key foundation-elements of this study. Therefore, the rationale for the preliminary study and a history of the CRS development and implementation is provided before describing the research design of the current study.

### **Rationale for the Preliminary Study**

The purpose of the preliminary study was to supplement national research on workforce skills and to better understand critical workforce skills and skills gaps in the Chattanooga region. Essentially, the study was performed in order to provide a local perspective on workforce skills that could be compared to national research and could inform efforts to further develop the workforce in the Chattanooga region. The value of, and potential for, college-business partnerships was addressed as a component of the effort to develop workforce skills. However, study results primarily consisted of the presentation of descriptive statistics regarding perceived skills gaps, training methods, and workforce skills deemed to be critical. Thus, the preliminary study did not examine responses to all of the CRS questions and did not include any inferential statistics or more in-depth data analysis.

### **Background of the CRS**

The CRS was developed to supplement national workforce-skills research with a local perspective and to better understand critical workforce skills and skills gaps in the Chattanooga region. While many of the CRS questions use a 5-point Likert-Scale format, the survey also

included some open-ended questions in order to allow for more flexibility in expression than would be allowed by an established list of possible responses.

### **Development of the CRS.**

The University of Missouri – St. Louis (UMSL) College of Business Administration (2010) study was used as input to select many of the issues on which the CRS focused.

Additionally, the critical skills identified in the UMSL study were used to develop the list of skills on which the CRS questions focused.

While many of the CRS questions are similar to the UMSL survey, the CRS and the UMSL survey differ significantly due to the population of interest. The UMSL survey was conducted nationally, and its population of interest was “UMSL College of Business Administration Alumni, minimum 4 year degree and HR professionals” (University of Missouri – St. Louis College of Business Administration (UMSL), 2010, p. 14). The CRS population of interest was only the Chattanooga region and was not restricted to human resource professionals with a 4-year degree.

The CRS also differs significantly from the UMSL survey in its depth of focus on college-business partnership dynamics. The CRS was designed, in part, to provide input for identifying opportunities to build college-business partnerships related to development of workforce skills.

### **Implementation of the CRS.**

The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) approved the original research project # 11-077 (see Appendix A) and the research project (# 12-062) for this dissertation.

***Description of the population.***

The CRS focused on perceptions of the workforce regarding workforce skills and related issues. Therefore, the population of the study consisted of residents of the Chattanooga region who were currently in the workforce at the time of the study.

***Description of the sample.***

The CRS was conducted of local business stakeholders (members of the local workforce) in the Chattanooga, Tennessee region from June 1, 2011 through June 18, 2011. A purposive sample was taken of contacts in a cross-section of jobs from a variety of industries. The survey was administered online by contacting 42 members of the local workforce. Snowball sampling, as described by Babbie (2001), was used to expand the sample size beyond the initial 42 people contacted. Out of the 111 respondents from the Southeast Tennessee/North Georgia area who started the survey, 78 completed the survey, generating a 70.3% survey response completion rate.

***Survey instrument and data collection.***

The survey was administered online, using software provided by QuestionPro.com. The survey instrument is shown in Appendix B.

**Description of the Research Design**

The research design for this study is predominantly survey methodology and will incorporate the results from the preliminary study (as applicable) and will perform an in-depth analysis of the CRS data. Results of the analysis will be used to answer Research Question 1 and will provide input to develop a response to Research Question 2. Learning theory, leadership

theory, and other research will also be considered when forming a response to Research Question 2.

### **Data Analysis Plan**

Examination of the CRS data will begin with the presentation of descriptive statistics related to the demographic data contained in the survey. Analysis of the data will then be performed in two phases. The first phase will involve asking supporting questions to develop an answer to the first research question. The second phase will involve asking supporting questions to guide development of a response to the second research question.

### **Demographic Data**

Descriptive statistics will be provided regarding the demographic data in the survey. Respondent characteristics such as gender, size of affiliated organization, industry affiliation, job position, and education level will be provided to better understand the perspectives represented in the survey.

### **Data Analysis Methodology Used to Respond to Research Question 1**

Research Question 1 asks “What are considered to be the urgently critical workforce skills in the Chattanooga region?” In order to answer this question, the survey data will be analyzed to answer the following two supporting questions:

- Which skills are considered critical workforce skills?
- Which critical workforce skills have the largest skills gaps?

The answer to the first question will provide a list of critical skills. The second question will investigate which of these skills are currently perceived to be most lacking in the workforce. The notion that the workforce may currently be lacking in skills that are considered to be critical

is what creates the sense of urgency. Thus, from the answers to these two questions, a list of the urgently critical workforce skills in the Chattanooga region will be developed. Details of the methodology used to answer these two questions will be presented in Chapter Four.

### **Data Analysis Methodology Used to Respond to Research Question 2**

Research Question 2 asks “How can colleges and businesses partner to effectively develop critical workforce skills in the Chattanooga region?” Unlike the first research question, which leads to a convergence of thought regarding a specific set of skills, the second research question can lead to a divergence of ideas and countless possibilities.

Research Question 2 spawns various visions of what a college-business partnership could be and calls to mind a variety of missions that the partnerships could strive to accomplish. Determining a partnership vision and mission are essential strategic-planning steps to be performed as specific college-business partnerships are developed. However, according to the strategic-planning approach outlined by Goetsch and Davis (2010), a *Strengths, Weaknesses, Opportunities, and Threats Analysis (or SWOT Analysis)* should be performed prior to development of the vision and mission. Such analysis involves an examination of the environment, both internal and external to the organization (or partnership, in this case). The SWOT Analysis, a term commonly used in strategic planning, is performed so that strengths and weaknesses of the organization can be optimally fit with opportunities and threats of the current environment in which the organization functions.

While Research Question 2 does not call for a formal SWOT Analysis, the question captures the essence of a SWOT Analysis as it seeks to understand how the interests and capabilities of colleges and businesses can best be combined to address the conditions of the workforce environment. Thus, the primary purpose of this question is not to prescribe one

specific vision and mission for college-business partnerships; but to explicate the context in which college-business-partnership visions and missions can be effectively established to develop workforce skills. Therefore, in order to form a response to Research Question 2, analysis of the survey data will focus on the following issues, each of which includes at least two supporting questions to answer:

- College responsibility and impact regarding development of workforce skills
  - For which skills are colleges perceived to have the most responsibility to develop?
  - Which skills do colleges most effectively develop?
- College-business interaction related to workforce-skills development
  - What is the environment for developing college-business partnerships?
  - How can colleges help businesses develop workforce skills?
  - How can businesses help colleges develop workforce skills?
- Effective training methods
  - Which training methods are effectively used by businesses?
  - Which training methods are effectively used by individuals?

Details of the methodology used to address each of the issues (and the supporting questions) will be presented in Chapter Four.

## **CHAPTER 4**

### **ANALYSIS**

#### **Introduction**

Chapter Four will begin with details of the methodology used for analyzing the CRS data to address the research questions. Examination of the CRS data will begin with the presentation of descriptive statistics related to the demographic data contained in the survey. The demographic data includes respondent characteristics such as gender, size and industry type of affiliated organization, job position, and education level. Following the demographic statistics will be a presentation of the detailed procedures used to analyze the CRS data. Results of the analysis will then be presented in two phases, as outlined in Chapter Three.

#### **Demographic Data**

The survey included questions to gather respondent demographic data and other respondent characteristics. Forty-five (or 58%) of the respondents were female and 32 (or 42%) of the respondents were male (one respondent did not specify gender).

A breakdown of the respondents' organization size is shown in Table 2. Not all totals will equal 78 due to some questions not being answered by all respondents. As can be seen in Table 2, organizations of all sizes are represented in the survey. Even the smallest organizations and the largest organizations are well-represented.



Table 2 Size of respondent organizations represented in the CRS

Organization Size (# employees)	Respondents	
	<i>N</i>	%
1 to 5	10	12.8
6 to 20	7	9.0
21 to 100	23	29.5
101 to 500	11	14.1
501 to 1000	11	14.1
1001 +	16	20.5
Total	78	100.0

Table 3 Type of industry represented in the CRS

Type of Industry	Respondents	
	<i>N</i>	%
Education	11	14.3
Government	16	20.8
Health Care	11	14.3
Insurance	5	6.5
Manufacturing	14	18.2
Professional Services	6	7.8
Nonprofit/Social Services	11	14.3
Other	3	3.9
Total	77	100.1 <sup>a</sup>

<sup>a</sup> Total does not equal 100.0 due to rounding.

The type and frequency of industries represented by the respondents is shown in Table 3. As Table 3 indicates, the respondents represent a diverse group of industries. Such diversity should provide a very informative, comprehensive view of workforce skills and needs for the Chattanooga region.

Respondent job-position in the organization is indicated by Table 4. While the majority of respondents are in management positions, a substantial percentage (35.9%) of respondents is in non-management positions.

Table 4 Job position of respondents in the CRS

Job Position	Respondents	
	<i>N</i>	%
Executive Management	21	26.9
Middle Management	29	37.2
Technical/Skill Position	18	23.1
Other	10	12.8
Total	78	100.0

Respondent education-level is shown in Table 5. According to the U.S. Census Bureau (2010), the percentage of the population 25 and over in Hamilton County who have at least an associate’s degree or higher is 34.1%. Therefore, with 87.2% of the survey respondents having at least an associate’s degree, the sample represents a disproportionately high percentage of the population with college experience. While this lack of diversity in education level of survey respondents may limit conclusions to a specific minimum education level, such a delimiting factor should be helpful for this survey since there are questions requiring familiarity with college and the college experience.

Table 5 Education level of respondents in CRS

Education Level	Respondents	
	<i>N</i>	%
High School Diploma	10	12.8
Associate’s or Bachelor’s degree	36	46.1
Master’s degree	24	30.8
Doctorate	8	10.3
Total	78	100.0

### **Detailed Procedure Used to Analyze the CRS Data**

Detailed procedures for analyzing the CRS data will now be described. The reasoning behind each procedure will also be provided as the procedure is being presented. Such details will be provided for each of the supporting questions on which the responses to the research questions are based.

### **Procedure Used to Analyze CRS Data Related to Research Question 1**

Research Question 1 asks “What are considered to be the urgently critical workforce skills in the Chattanooga region?” In order to answer this question, the survey data will be analyzed to answer the following two supporting questions:

- Which skills are considered critical workforce skills?
- Which critical workforce skills have the largest skills gaps?

The answer to the first question will provide a list of critical skills. The second question will investigate which of these skills are currently perceived to be most lacking in the workforce. The notion that the workforce may currently be lacking in skills that are considered to be critical is what creates the sense of urgency. Thus, from the answers to these two questions, a list of the

urgently critical workforce skills in the Chattanooga region will be developed. The analysis methodology for answering these two questions is described below.

**Which skills are considered critical workforce skills?**

This section will analyze survey data (*Questions 11 and 20*) in order to develop a list of critical workforce skills (selected from the list of skills shown in Table 6).

Table 6 List of skills to be rated by respondents

Skill
Active Listening
Customer Orientation
Critical/Analytical Thinking
Oral Communications
Time Management
Written Communications
Teamwork/Collaboration
Prioritization, Focus
Decision Making
Leadership
Execution
Data Analysis
Change Management

*Note:* The last three skills are additional skills identified as critical in the UMSL 2008 survey but not identified as critical in the UMSL 2010 survey.

The survey data used to identify critical workforce-skills will come initially from the responses to survey *Question 11*, which asks respondents to rate the importance of each skill listed. The responses to this question will be used to identify a preliminary list of critical skills. Hypothesis tests (appropriate for the scale of measurement) will be performed to determine which skills from the preliminary list are generally considered to be critical, regardless of

industry affiliation, size of respondent's organization and other respondent factors. Before finalizing the list of critical skills, the responses to *Question 20* will be examined. *Question 20* asks the respondents to choose from the list of 13 skills, the one skill they have found most helpful in their professional career. Any skill chosen at a significantly higher frequency than other skills will be added to the list of critical workforce-skills. A more detailed description of this process is provided below.

*Question 11* provided a list of 13 workforce skills and asked the respondent to "Rate the importance of each of the following workforce skills, considering the impact each skill has on your organization's efforts to achieve performance excellence." Respondents were asked to rate the importance of each of 13 workforce skills. Respondents were asked to rate each skill as 1 (*Insignificant*), 2 (*Minor Importance*), 3 (*Moderate Importance*), 4 (*Major Importance*), or 5 (*Critical*). A cross-tabulation table will be used to summarize the responses for each of the skills rated. The mode rating for each skill will also be reported. Any skill with a mode rating of 5 will be included in the preliminary list of critical skills. This list will then be ranked based on the frequency of 5 responses.

The effort to identify a set of critical workforce-skills is focused primarily on identifying a robust set of critical skills that, ideally, are deemed critical regardless of factors such as the respondent's length of time in the workforce, industry type, and other characteristics. Therefore, for each of the skills identified in the preliminary list of critical skills, a Kruskal-Wallis test for equality of medians will be conducted to determine whether factors such as gender, industry type, organization size, position type, or education level have a significant impact on the importance rating attributed to that skill. The hypothesis test used to test the significance of the

respondent's length of time in the workforce will be an Analysis of Variance test. The P-value from the hypothesis tests for each factor will be shown, regardless of the type of test used.

In the interest of identifying a robust list of workforce skills that are considered critical across a spectrum of factors, the initial analysis of the data will focus on the skills whose importance ratings are least affected by a difference in factor levels for each factor (i.e. respondent characteristics). The P-values associated with the hypothesis tests will be used to determine the skills least significantly affected by the factors tested. The intention is to initially develop a list of workforce skills considered to be critical by community stakeholders regardless of their educational background, type of industry affiliation, years in the workforce, and other factors. Therefore, only skills with an importance rating relatively unaffected by these factors will be retained for inclusion in the list of critical workforce skills. Because the selection process is designed to identify workforce skills considered critical from a variety of workforce perspectives in the community, the resulting list will be referred to as the list of *community-wide critical skills*.

The above method used to identify community-wide critical skills focuses on rating the importance of each skill with respect to its impact on organizational performance. Many of the surveys reviewed in this dissertation also took an organization-centric view when identifying important workforce skills (Charleston Metro Chamber of Commerce, 2008; National Association of Manufacturers, 2005; North Carolina Department of Labor, 2006; Partnership for 21<sup>st</sup> Century Skills, 2006; Ready Indiana, 2010; Stevens, 2005; University of Missouri – St. Louis College of Business Administration, 2010; Washington State Workforce Training and Education Coordinating Board, 2006).

*Trends affecting selection of workforce skills perspectives.*

Emerging workforce, social, and technological conditions suggest, however, that the organization-centric approach to identifying critical workforce-skills, important as it is, should be supplemented with an additional approach. The U.S. Census Bureau (2011b) states that “In 2010, 37.5 million people 1 year and older changed residences in the U.S. within the past year.” (para. 3). Therefore, the workforce is highly mobile. As mentioned earlier in this paper, there is also a projected shortage of skilled workers, which would presumably drive up wages for skilled workers. A report by Carnevale and Rose (2011) discusses the increasing wage premium paid for workers with a Bachelor’s Degree. This fact not only suggests that the projected shortage is being realized now, but that skilled workers are in a stronger bargaining position when it comes to selecting an employer. Along with these social and workforce conditions, our current technology provides job seekers almost perfect knowledge of the job market (relative to the pre-internet era). Thus, considering the combined impact of these conditions, an application of the logic and laws of economics suggests that the competition between companies for workers (particularly skilled workers) is likely to become more intense and extend well beyond a company’s immediate geographic area. Such competition for skilled workers is likely to shift the balance of power, even if marginally, to the workforce. As a result, the workforce (particularly the skilled workforce) may be less focused on further developing a skill-set to meet the unique skills needs of a particular organization (or even community) and more focused on developing the skills that are transferrable from organization to organization and are helpful from a personal development standpoint.

***Personal impact of workforce skills.***

Based on the reasoning just provided, the responses from *Question 20* will be considered before finalizing the list of community-wide critical workforce skills. *Question 20* asks the respondents “Which workforce skill have you found to be most helpful in your professional career?” Analysis of responses to this question will be particularly helpful because this question provides a different vantage point from which important skills might usually be viewed. Survey questions designed to identify important workforce skills often ask the respondents to think in terms of the organization and what would help the organization perform better. *Question 20*, however, asks the respondents to think of the 13 skills on a more personal level. Such insight may not only validate skills previously identified as important, but may indicate a potential value in considering a more personal dimension to future identification of workforce skills and recommended career paths. Therefore, the frequency of respondents identifying a particular skill as most helpful from a personal-impact perspective will be examined to detect any skill (or set of skills) that should be added to the list of community-wide critical workforce skills.

The criteria for detecting these skills will be based on the binomial probability distribution with parameters  $n = 77$  (for sample size of 77 responses) and  $p = .0769$  (probability of  $1/13$  that any one of the 13 skills will be deemed most helpful by a respondent). Using this probability distribution, there is only a probability of .071 that 10 or more respondents will select a particular skill as most helpful just by chance. With such a low probability of 10 or more respondents rating a particular skill as most helpful just by chance, the logic of hypothesis testing will be used to conclude that such an occurrence indicates that the skill is considered to be important by the workforce. Therefore, the selection of a particular skill by 10 or more respondents will be considered significant and will result in that skill being added to the list of



community-wide critical skills (that was initially developed by examining the *Question 11* ratings).

Before concluding the description of the methodology used to identify community-wide critical skills, it is important to note the potential insight that can be gained from a deeper exploration of the relationship between the perceived importance of a skill and various respondent factors. For example, if respondents from a manufacturing perspective place significantly greater value in leadership skills than do other industry sectors, then such insight could be very instructive in targeting workforce skill development approaches for manufacturing companies. Therefore, even though some of the skills may be dropped in the interest of developing a more general set of community-wide critical skills, the skill-factor(s) dependencies discovered will be important results. These important results will be noted later for further investigation. However, such an investigation of these results is not within the scope of this paper.

### **Which critical workforce skills have the largest skills gaps?**

Once the community-wide critical workforce-skills have been identified, the survey data will be analyzed to determine the skills in which the level of workforce competence is considered to be relatively low. For the list of 13 skills provided, survey respondents were asked to rate the skill level of employees as follows: 1 (*No Competence*), 2 (*Minor Competence*), 3 (*Moderate Competence*), 4 (*High Competence*), or 5 (*Expert Level*). *Question 13* asked respondents to rate the skill level of employees who have been employed at the respondent's organization for at least one year. *Question 16* asked the same question, but about recently-hired college graduates (working at the organization for less than one year) at the respondent's organization.

Since these two questions are about two subpopulations of the workforce, the responses will initially be analyzed separately in order to develop a list of what will be called *urgently-critical skills*. The analysis performed in this section will focus primarily on the list of community-wide critical skills. For this subset of skills, the frequencies of 1 (*No Competence*) and 2 (*Minor Competence*) responses will be summed and compared to determine the three skills with the lowest competence ratings for *Question 13*. The same process will be followed for *Question 16*. While this process could generate as many as six urgently critical skills, it is expected that there will be some skills appearing in both lists.

It is quite possible that significant skills gaps also exist for some of the skills not identified as a community-wide critical skill. It is important to note that such skills gaps indicate opportunities to improve the workforce development process as well.

### **Procedure Used to Analyze CRS Data Related to Research Question 2**

Research Question 2 asks “How can colleges and businesses partner to effectively develop critical workforce skills in the Chattanooga region?” In order to form a response to Research Question 2, analysis of the survey data will focus on the following issues, each of which includes at least two supporting questions to answer:

- College responsibility and impact regarding development of workforce skills
  - For which skills are colleges perceived to have the most responsibility to develop?
  - Which skills do colleges most effectively develop?
- College-business interaction related to workforce-skills development
  - What is the environment for developing college-business partnerships?
  - How can colleges help businesses develop workforce skills?

- How can businesses help colleges develop workforce skills?
- Effective training methods
  - Which training methods are effectively used by businesses?
  - Which training methods are effectively used by individuals?

The analysis performed to address each of the issues (and supporting questions) is described below.

### **College responsibility and impact regarding development of workforce skills.**

This section will start exploring the link between colleges and the development of workforce skills. The first question looks into what level of responsibility colleges are perceived by the community to have in developing various workforce skills. If the community believes that colleges have a primary responsibility to develop a particular skill (or set of skills), then such a mindset would be important to consider as opportunities for college-business partnerships are identified. The second question seeks to determine the level of effectiveness colleges are perceived to have in developing various workforce skills. Considering the impact on development of college-business partnerships, the perception of college effectiveness in developing workforce skills is a key factor, regardless of how accurately it reflects actual college effectiveness.

#### ***For which skills are colleges perceived to have the most responsibility to develop?***

The data analysis performed in this section will seek to determine what the community expects of colleges regarding development of workforce skills. For each of the 13 skills listed, *Question 15* asks respondents what level of responsibility colleges should have to help students develop that skill. The respondent is asked to choose from one of 5 possible responses: 1 (*No*

*Responsibility*), 2 (*Minor Responsibility*), 3 (*Moderate Responsibility*), 4 (*Major Responsibility*), 5 (*Primary Responsibility*). The frequencies of 5 (*Primary Responsibility*) responses for each of the skills will be compared to determine the top three skills for which colleges are expected to have the most responsibility to develop in students. This list will be referred to as *college-responsibility skills*.

### ***Which skills do colleges most effectively develop?***

The analysis in this section will begin with the recognition that learning occurs in the workplace as well as on the college campus. Furthermore, it is likely that each of these two learning environments will differ in how effectively they promote development of a specific skill. Knowing which environment more effectively promotes development of a specific skill can provide vital information in structuring a college-business partnership.

As discussed earlier, *Question 13* and *Question 16* asked respondents to rate the competence level of skills for relatively experienced employees and for recently-hired college graduates, respectively. A nonparametric Sign Test of paired differences will be used to test the perceived skill level of the two groups for each skill. The null hypothesis is that the perceived skill competence is the same for the experienced employees as for the recently hired college graduates. The alternative hypothesis is that the perceived skill competence of the experienced employees is greater than the perceived competence level of the recently hired college graduates. The data set used for this test will be the set of differences calculated by subtracting each respondent's rating of recent college graduate competence from the respondent's competence rating of that skill for more experienced employees. Thus, the data set analyzed for each skill will consist of 78 observations generated from the (*Question 13* rating minus *Question 16* rating) result calculated for each of the 78 respondents.

The hypothesis tests described above will be performed to detect significant differences between perceived competence levels of experienced employees and recently-hired college graduates. It is important to note that the experienced workforce includes many college graduates (although not exclusively). Also, the skills being rated are not technology-centered, thus reducing the possible impact of any generational factor that could produce a more favorable perception of recent college graduates. Considering these factors, it is expected that the respondents will perceive the experienced employees, as a whole, to be more competent than recently-hired college graduates at all (or nearly all) of the skills being rated. However, in order to determine if there is, indeed, a statistically-significant difference in perception, the Sign Tests described in this section will be performed.

While the conclusion of each Sign Test is important (particularly if it shows recent college graduates are perceived to be *more* competent in a specific skill), it is the set of P-values from the tests that will be especially helpful. The P-value for a hypothesis test can be thought of as the probability that the null hypothesis is true, based on the sample data collected (Levin & Fox, 2007). Thus, low P-values support rejection of the null hypothesis in favor of the alternative hypothesis. As described earlier, the alternative hypothesis is that for a particular skill, the experienced employees are perceived to be more competent than recent college graduates. So, for example, if the P-value for the *Leadership* skill Sign Test is .0001 and the P-value for the *Execution* skill Sign Test is .07 then the competence levels of the experienced employees and the recent college graduates are perceived to be more similar for *Execution* skills than for *Leadership* skills.

The logic just described will be used to compare the P-values generated from the Sign Tests in this section. Doing so will help identify the skills in which the perceived competence

level of recent college graduates is relatively similar to the perceived competence level of experienced employees. Therefore, the P-values generated from the Sign Tests will be compiled and used to rank the skills by perceived level of competence of recently-hired college graduates (from highest to lowest). The purpose of ranking the perceived skill competence-levels of recent college graduates is to develop a list of skills that are effectively developed in college (at least in a relative sense). This list of skills will be referred to as *college-effectiveness skills*.

### **College-Business interaction related to workforce-skills development.**

Analysis of the survey data in this section will focus on identifying opportunities to form college-business partnerships that will help develop workforce skills. The process of exploring the conditions for developing college-business partnerships will begin with a comparison of three lists of skills generated thus far.

#### ***What is the environment for developing college-business partnerships?***

The analysis at this point will have generated a list of urgently critical skills, a list of skills for which colleges are expected to have the most responsibility in developing (college-responsibility skills), and a list of skills effectively developed in college (college-effectiveness skills). The urgently critical skills are the skills that are valued highly by community stakeholders but are also perceived to be relatively lacking in the workforce. Therefore, this list indicates the skills that are in greatest need of development. The skills for which colleges are expected to have the most responsibility in developing are presumably the skills that colleges would have the greatest community support for developing. The list of skills effectively developed in college provides an indication of some of the skill areas in which colleges are currently having the most positive impact. These three lists will be compared in order to identify

college-business partnership opportunities and to determine how to leverage community perceptions and college capabilities to effectively develop workforce skills.

Four comparisons of the three lists of skills will be made. Initially, the three lists will be reviewed to see if there are any skills present in every list. Applying the logic of triangulation, any skill found in all three lists would then be identified as one of the most essential skills on which a college-business partnership should be focused. The three lists will then be examined to find any skills that only two of the three lists have in common. A skill found to be common between any two lists will have unique implications, as described below.

The three lists will be reviewed to identify skills that are only common between the urgently-critical skills and the college-effectiveness skills. If any such skills are found, then these skills could be the focus of more immediate partnerships since there is an urgent need for development of these skills, and colleges are already effective in helping develop these skills.

The three lists will then be reviewed to identify skills that are only common between the list of urgently-critical skills and the list of college-responsibility skills. Any skill that these two lists have in common will be an important skill in need of further development and one for which colleges are expected to develop. Therefore, if any such skills are found, they provide potential areas for instructional-improvement and student-engagement strategies that can have a significant impact on the community. Since these skills would not be in the list of college-effectiveness skills, it is likely that college effectiveness in developing these skills is not commensurate with the level of responsibility that colleges are expected to have for developing them. Thus, any skills identified here represent an opportunity for a college to enhance its reputation by more effectively developing these skills, since such skills are likely to be expected of students graduating from its institution.

The final comparison of the three lists will be made to identify skills that are only common between the list of college-effectiveness skills and the list of college-responsibility skills. Skills that these two lists have in common have the potential to be overshadowed as college-business partnerships are formed, since they are not among the urgently critical skills. However, because colleges are expected to develop these skills, they could represent a threat to a college's reputation if a college does not continue to effectively develop them in their students.

The skills (if any) found to be common among all three lists will be considered *essential community-wide critical skills*. The skills found to be common between any two of the three lists compared will be considered context-specific critical skills. All of these critical skills will be important to consider when building college-business partnerships to develop workforce skills.

### ***How can colleges help businesses develop workforce skills?***

The methodology detailed above will identify critical workforce skills and describe the current environment for college-business interaction regarding skill development. The next step of the survey-data analysis will be to determine specific opportunities for college-business partnerships that effectively develop workforce skills. Therefore, the analysis will now focus on survey *Question 17*, which relates to effective training methods and how colleges and businesses can work together to more effectively develop workforce skills.

*Question 17* provided a list of nine actions that colleges could take and asked the respondents "If colleges were to take the following actions, how effective would each be in helping your organization develop/improve workforce skills?" For each action listed, the respondents were asked to provide their opinion of effectiveness as follows: 1 (*Ineffective*), 2 (*Minimally Effective*), 3 (*Moderately Effective*), 4 (*Very Effective*), 5 (*Most Effective*). The frequencies of 5 (*Most Effective*) responses for each of the actions will be compared to determine



the top three actions by colleges that are perceived by the respondents to work well for developing workforce skills.

***How can businesses help colleges develop workforce skills?***

*Question 18* asked “How can organizations like yours most effectively help local colleges develop workforce skills in the future workforce?” A list of seven possible actions was listed, from which the respondents were instructed to choose at least one. Also, an *Other* option with space for open-ended text was provided in the event that the respondent wanted to suggest another course of action. The open-ended text responses will be examined and categorized, as appropriate, into additional courses of action. The frequency with which each course of action was chosen will be tabulated and analyzed to determine if there are any actions substantially preferred over others. These preferred actions will be noted for further consideration when specific college-business partnership opportunities are explored.

**Effective training methods.**

In developing a response to Research Question 2, the final issue to be investigated using the survey data is the issue of effective training methods. The survey data will be analyzed to provide insight into which training methods are perceived to be effective and the frequency with which each training method is used. The two supporting questions below will gather such information from an organizational perspective and from an individual perspective.

***Which training methods are effectively used by businesses?***

*Question 17* provides insight into how the survey respondents think colleges can help their organization develop workforce skills. *Question 19*, however, looks more into the methods actually used by respondent organizations to develop employee workforce skills. This question

asks “Which of the following training methods are used by your organization?” For each of the 13 methods listed for providing training, the respondents were asked to provide their opinion of effectiveness as follows: 0 (*Not Used At All*), 1 (*Used: Ineffective*), 2 (*Used: Minimally Effective*), 3 (*Used: Moderately Effective*), 4 (*Used: Very Effective*), 5 (*Used: Most Effective*). From the responses to this question, a frequency table will be constructed to show the most widely used approaches for providing training. These frequencies will be compared to determine the top three training methods used by organizations in their effort to develop workforce skills.

A relative frequency table will be constructed to show the percentage of respondents rating each training method as a 5 (Most Effective), and to show the percentage of respondents rating each training method as a 1 (Ineffective). The calculated percentages for each training method will only consider the responses indicating that the training method is being used. In order to generate an indicator of perceived training method effectiveness that takes into account positive perceptions and negative perceptions, a ratio of the frequency of *Most Effective* ratings to the frequency of *Ineffective* ratings will be calculated.

### ***Which training methods are effectively used by individuals?***

Just as the methodology for identifying critical skills included an organizational perspective (*Question 11*) and a personal perspective (*Question 20*), so too will the identification of effective training approaches. *Question 17* provided a list of possible actions that colleges could take and asked respondents to rate how effective they thought each action would be in helping their organization develop workforce skills. *Question 19* provided a list of training methods and asked the respondents to state whether or not their organization used that method (and the effectiveness of the method). Thus, the responses to these two questions, even though

they represent the respondent's personal opinions, provide insight into effectiveness of training methods from an organization-impact perspective.

Responses to *Question 21*, however, provide more insight into effective training methods from a personal, individual-impact perspective. After respondents were asked to choose which skill has been most helpful in their professional career (*Question 20*), *Question 21* asked "How did you learn the workforce skill chosen in Question 20?" Open-ended responses to this question were allowed, thus providing a potentially deeper understanding of effective training methods from a personal perspective. Associated frequencies will be tabulated to determine if there is any predominant learning environment that respondents attribute to their learning of important workforce skills. If a specific approach is mentioned with a frequency substantially higher than all others then the approach will be added to the list of effective training methods. However, these frequencies will primarily be compared to determine the most prevalent learning environment in which individuals developed their most helpful workforce skill.

### **Results of CRS Data Analysis**

Results of the analysis will now be presented in the two phases outlined in Chapter Three. The results were generated by following the detailed procedures described earlier in this chapter.

#### **Results of Analysis Related to Research Question 1**

Research Question 1 asks "What are considered to be the urgently critical workforce skills in the Chattanooga region?" Results of the analysis will be organized by the two supporting questions used to answer Research Question 1.

### **Which skills are considered critical workforce skills?**

The survey data used to identify critical workforce-skills will come initially from the responses to survey *Question 11*, which asked respondents to rate the importance of each skill listed. The responses to this question were used to identify a preliminary list of critical skills from an organization-impact perspective. Before finalizing the list of critical skills, the responses to *Question 20* were examined to consider critical skills from a personal-impact perspective. *Question 20* asked the respondents to choose from the list of 13 skills, the one skill that they have found most helpful in their professional career. Any skill chosen at a significantly higher frequency than other skills was added to the list of critical workforce-skills.

#### ***Critical skills from an organization-impact perspective.***

*Question 11* provided a list of 13 workforce skills and asked the respondent to “Rate the importance of each of the following workforce skills, considering the impact each skill has on your organization’s efforts to achieve performance excellence.” Respondents were asked to rate the importance of each of 13 workforce skills and to rate each skill as 1 (*Insignificant*), 2 (*Minor Importance*), 3 (*Moderate Importance*), 4 (*Major Importance*), or 5 (*Critical*). Table 7 is a summary of the responses for each of the skills rated.

As a possible indication of the wide range of workforce skills needed, all of the skills were at least rated as moderately important by a high percentage of the respondents. Even the two skills receiving the highest number of low-importance ratings received just a few of these ratings. The skill with the highest combined percentage of insignificant and minor importance ratings was change management, at 8.9%. Data analysis skills followed with 7.7% of respondents rating this skill as insignificant or of minor importance.

Table 7 Frequency (and relative frequency) of respondent ratings of skill importance

Skill	'1' Rating		'2' Rating		'3' Rating		'4' Rating		'5' Rating	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Active Listening	1	1.3	0	0.0	7	9.0	32	41.0	38	48.7
Customer Orientation	1	1.3	1	1.3	8	10.3	22	28.2	46	59.0
Critical/Analytical Thinking	1	1.3	1	1.3	10	12.8	25	32.1	41	52.6
Oral Communications	1	1.3	0	0.0	6	7.7	30	38.5	41	52.6
Time Management	1	1.3	0	0.0	11	14.1	33	42.3	33	42.3
Written Communications	1	1.3	2	2.6	11	14.1	29	37.2	35	44.9
Teamwork/Collaboration	1	1.3	0	0.0	2	2.6	31	39.7	44	56.4
Prioritization, Focus	1	1.3	0	0.0	7	9.0	30	38.5	40	51.3
Decision Making	1	1.3	0	0.0	3	3.8	39	50.0	35	44.9
Leadership	1	1.3	1	1.3	13	16.7	24	30.8	39	50.0
Execution	1	1.3	1	1.3	5	6.4	21	26.9	50	64.1
Data Analysis	2	2.6	4	5.1	17	21.8	28	35.9	27	34.6
Change Management	3	3.8	4	5.1	12	15.4	38	48.7	21	26.9

Note: Row percentages may not equal 100.0 due to rounding error.

The mode rating can be found by examining Table 7 and selecting the most frequently provided response rating. Any skill with a mode rating of '5' was included in the preliminary list of critical skills. The *Time Management* skill ratings were bimodal (with an equally high number of 4 responses and 5 responses) so that skill was also included in the list.

The resulting preliminary list of critical skills (ranked by the frequency of 5 responses) is shown in Table 8. The large number of skills that were rated as critical suggests that, as noted earlier, a wide range of workforce skills are needed, or at least considered to be important, in helping an organization achieve performance excellence. Only skills in decision-making, data analysis, and change management were not considered to be critical skills. However, even these skills were considered to be of major importance.

Table 8 Preliminary list of critical skills (ranked by frequency of ‘Critical’ rating)

Skill	Frequency of ‘5’ rating responses	
	<i>f</i>	%
Execution	50	64.1
Customer Orientation	46	59.0
Teamwork/Collaboration	44	56.4
Critical/Analytical Thinking	41	52.6
Oral Communications	41	52.6
Prioritization, Focus	40	51.3
Leadership	39	50.0
Active Listening	38	48.7
Written Communications	35	44.9
Time Management	33	42.3

The effort to identify a set of critical workforce skills is focused primarily on identifying a robust set of critical skills that, ideally, are deemed critical regardless of factors such as the respondent’s length of time in the workforce, industry type, and other characteristics. Therefore, for each of the skills identified in the preliminary list of critical skills, a Kruskal-Wallis test for equality of medians was conducted to determine whether factors such as gender, industry type, organization size, position type, or education level had a significant impact on the importance rating attributed to that skill.

An Anderson-Darling test (level of significance=0.10) for normality was performed on the number of years in the workforce for the respondents. The data set was found to be approximately normal. Furthermore, a Bartlett’s test for equal variances of years in the workforce was performed for the different rating levels of each skill. For all but one skill, *Customer Orientation*, the null hypothesis of equal variances could not be rejected at the .10

level of significance. Therefore, except for the *Customer Orientation* skill rating responses, the hypothesis test used to test the significance of the respondent's length of time in the workforce will be an Analysis of Variance test.

Because the assumptions of Analysis of Variance were not valid for the *Customer Orientation* skill, another approach was used. In order to test whether a respondent's number of years in the workforce had a significant impact on the rating of the *Customer Orientation* skill, a respondent's length of time in the workforce was categorized as Level 1 (1 to 10 years), Level 2 (11 to 20 years), and Level 3 (more than 20 years). A Kruskal-Wallis test for equality of medians was then performed. The resulting P-value of .565 indicates that a respondent's length of time in the workforce did not significantly affect his/her rating of *Customer Orientation* skill importance.

The resulting P-values of the hypothesis tests are summarized in Table 9, regardless of type of hypothesis test used to test significance of factor impact on each skill's rating. The P-values associated with the hypothesis tests will be used to determine the skills least significantly affected by the factors tested. The intention is to develop a list of workforce skills considered to be critical by community stakeholders regardless of their educational background, type of industry affiliation, years in the workforce, and other factors. Therefore, only skills with an importance rating relatively unaffected by these factors will be retained for inclusion in the list of critical workforce skills.

Table 9 P-values resulting from a Kruskal-Wallis test (except where noted) for equality of medians for each factor-skill rating combination

Skill	Factors (Respondent Characteristics)					
	<i>#Years in Workforce</i>	<i>Gender</i>	<i>Industry Type</i>	<i>Company Size</i>	<i>Job Title</i>	<i>Education Level</i>
Execution	<b>.807</b>	.071*	.185	.230	.095*	.274
Customer Orientation	.565	.845	.261	.898	.161	.518
Teamwork/Collaboration	<b>.491</b>	.013*	.015*	.004*	.975	.132
Critical/Analytical Thinking	<b>.157</b>	.030*	.084*	.130	.963	.905
Oral Communications	<b>.268</b>	.013*	.383	.333	.833	.753
Prioritization, Focus	<b>.046*</b>	.004*	.093*	.009*	.228	.893
Leadership	<b>.752</b>	.209	.495	.585	.511	.524
Active Listening	<b>.639</b>	.023*	.105	.211	.350	.878
Written Communications	<b>.098*</b>	.014*	.002*	.029*	.776	.775
Time Management	<b>.031*</b>	.001*	.010*	.009*	.111	.961

Note. p-values generated by an Analysis of Variance test are shown in boldface

\*  $p < .10$ . (Denotes significant factor effect on skill rating)

Keeping in mind the purpose of broad applicability of findings, it should be noted that the process for selecting skills unaffected by respondent factors will not consider the gender factor. It is important to point out that leaving the impact of the gender factor out of the selection process is not because of its perceived irrelevance. In fact, Table 9 shows that gender, indeed, has a significant effect on importance ratings of many of the skills tested. However, a quick glance at the percentage of males and females in each of the fifty states shows that the percentage of say, females, only ranges from a low of 50% in some states to a high of 52% in others (Kaiser Family Foundation, 2011). In the interest of a complete review, it should be noted that 53% of the population in the District of Columbia is female (Kaiser Family Foundation, 2011). With such a consistent percentage of each gender across every state, it is reasonable to assume that whatever impact gender has on importance ratings of each skill, it is relatively



constant across nearly every community (other than possible interaction effects that include other factors). Therefore, a skill whose rating is significantly affected by respondent gender may still be considered for inclusion in the list of skills relatively unaffected by respondent factors.

The P-values in Table 9 show that respondent gender had a significant effect on the skill ratings for all skills tested except for *Customer Orientation* skills and *Leadership* skills. One of the reasons this result is noteworthy is that it suggests that when training is provided for most of the skills listed (with the notable exceptions of customer orientation skills and leadership skills), one gender may tend to view that skill as more important, and thus, place more value on learning that skill than the other gender.

The results in Table 9 indicate that respondent education level did not have a significant effect on the importance rating of any of the skills listed. Since nearly all respondents have had at least four years experience in the workforce, this result may suggest a convergence of workforce views driven more by experience than education level. If true, this connection would demonstrate the potential value and impact of experiential learning. However, such a notion can only be considered speculation without a more in-depth study.

The process for selecting a list of critical needs was designed to balance the need for a list of skills considered important regardless of respondent factors and the need for an adequate number of skills to investigate further. Therefore, for this stage of the selection process, a skill was only added to the list if its importance rating was not significantly affected by any respondent factor (other than gender). Referring to the results in Table 9, this procedure resulted in a list of four skills identified as critical. These skills are active listening, customer orientation, leadership, and oral communication.

The process of identifying critical skills was designed to identify workforce skills considered critical from a variety of workforce perspectives in the community. Therefore, these skills will be included in the list of community-wide critical skills. This process has been focusing on rating the importance of each skill with respect to its impact on organizational performance. Such an approach is organization-centric and is commonly used because of its practical use in determining the skills infrastructure needs of a community. Based on the reasoning provided in the methodology section, a more personal perspective will also be considered.

***Critical skills from a personal-impact perspective.***

In order to include a more personal perspective regarding workforce skills, the responses from *Question 20* will be considered before finalizing the list of community-wide critical workforce skills. *Question 20* asks the respondents ‘which workforce skill have you found to be most helpful in your professional career?’ Analysis of responses to this question will be particularly helpful because this question provides a different vantage point from which important skills are usually viewed. Questions used to identify important workforce skills typically ask the respondents to think in terms of the organization and what would help the organization perform better. *Question 20*, however, asks the respondents to think of the 13 skills on a more personal level. Such insight may not only validate skills previously identified as important but may indicate a potential value in considering a more personal dimension to future identification of workforce skills and recommended career paths.

The frequency of respondents identifying a particular skill as most helpful was examined to detect any skill (or set of skills) predominantly viewed as most helpful. The respondent was

only allowed to select one skill from the list of skills provided. The frequencies are shown in Table 10.

Table 10 Respondent ratings of skill importance from a personal impact perspective

Skill	Frequency of Respondents Choosing Skill as Most Helpful in Professional Career (Q20)	
	<i>f</i>	%
Active Listening	5	6.5
Customer Orientation	6	7.8
Critical/Analytical Thinking	19	24.7
Oral Communications	5	6.5
Time Management	6	7.8
Written Communications	5	6.5
Teamwork/Collaboration	11	14.3
Prioritization, Focus	2	2.6
Decision Making	3	3.9
Leadership	5	6.5
Execution	5	6.5
Data Analysis	0	0.0
Change Management	4	5.2
Other	1	1.3

The criteria for detecting the significantly helpful skills from Q20 responses was based on the binomial probability distribution with parameters  $n=77$  (for 77 responses) and  $p=.0769$  (probability of 1/13 that any one of the 13 skills will be deemed most helpful). Using this probability distribution, we see that there is only a probability of .071 that 10 or more respondents will select a particular skill as most helpful. Therefore, the selection of a particular skill by 10 or more respondents was considered significant and resulted in that skill being added to the list of community-wide critical skills. Looking at the frequency of responses shown in Table 10, we see that two skills were deemed most helpful by 10 or more respondents. These

two skills are *Critical/Analytical Thinking* and *Teamwork/Collaboration*. Therefore, these two skills will be added to the list of community-wide critical skills. The final list of critical skills (considered from an organizational-impact perspective and a personal-impact perspective) is shown in Table 11.

Table 11 List of Community-wide Critical Skills

Skill
Active Listening
Customer Orientation
Leadership
Oral Communications
Critical/Analytical Thinking
Teamwork/Collaboration

**Which critical workforce skills have the largest skills gaps?**

Now that the community-wide critical workforce-skills have been identified, the survey data will be analyzed to determine the skills in which the level of workforce competence is considered to be relatively low. For the list of 13 skills provided, survey respondents were asked to rate the skill level of employees as follows: 1 (*No Competence*), 2 (*Minor Competence*), 3 (*Moderate Competence*), 4 (*High Competence*), or 5 (*Expert Level*). *Question 13* asked respondents to rate the skill level of employees who have been employed at the respondent’s organization for at least one year. *Question 16* asked the same question, but about recently-hired college graduates (working at the organization for less than one year) at the respondent’s organization.

Since these two questions asked of two subpopulations of the workforce, the responses will initially be analyzed separately in order to develop a list of what will be called *urgently-*

*critical skills*. For each of the community-wide critical skills, the frequencies of 1 (*No Competence*) and 2 (*Minor Competence*) responses to *Question 13* will be summed and the sums used in order to rank the skills by perceived level of competence. The same process will be followed for *Question 16*. Table 12 shows the results of this ranking process.

Table 12 Chattanooga region survey of perceived skill level of current employees and perceived skill level of recent college graduates (ranked from least competent to most competent)

Skill	Experienced Employees	Recent College Graduate Employees
Active Listening	1	3
Leadership	2	1.5 (tie)
Critical/Analytical Thinking	3	4
Customer Orientation	4	1.5 (tie)
Oral Communications	5	5.5 (tie)
Teamwork/Collaboration	6	5.5 (tie)

*Note:* Ranking is 1: Least Competent, ..., 6-Most Competent

The list of *urgently critical skills* will be compiled by selecting the three least-competent skills from each of the two subpopulations (experienced employees and recent college graduates). The resulting list of urgently critical skills is shown in Table 13.

Table 13 List of urgently critical skills

Skill
Active Listening
Leadership
Critical/Analytical Thinking
Customer Orientation

## **Results of Analysis Related to Research Question 2**

Research Question 2 asks “How can colleges and businesses partner to effectively develop critical workforce skills in the Chattanooga region?” Results of the analysis will be organized by the issues to be considered in forming a response to Research Question 2.

### **College responsibility and impact regarding development of workforce skills.**

This section will start exploring the link between colleges and the development of workforce skills. The first question looks into what level of responsibility colleges are perceived by the community to have in developing various workforce skills. The second question seeks to determine the level of effectiveness colleges are perceived to have in developing various workforce skills.

#### ***For which skills are colleges perceived to have the most responsibility to develop?***

The data analysis performed in this section will seek to determine what the community expects of colleges regarding development of workforce skills. For each of the 13 skills listed, *Question 15* asks respondents what level of responsibility colleges should have to help students develop that skill. The respondent is asked to choose from one of 5 possible responses: 1 (*No Responsibility*), 2 (*Minor Responsibility*), 3 (*Moderate Responsibility*), 4 (*Major Responsibility*), 5 (*Primary Responsibility*). The frequencies of 5 (*Primary Responsibility*) responses for each of the skills will be compared to determine the top three skills for which colleges are expected to have the most responsibility to develop in students. This list will be referred to as *college-responsibility skills*. Table 14 contains the resulting list of college-responsibility skills. As shown in this table, critical/analytical thinking skills are what colleges are perceived to have the most responsibility to develop in their students.

Table 14 List of college-responsibility skills

Skill	Ranking
Critical/Analytical Thinking	1
Written Communications	2
Oral Communications	3

***Which skills do colleges most effectively develop?***

As discussed earlier, *Question 13* and *Question 16* asked respondents to rate the competence level of skills for relatively experienced employees and for recently-hired college graduates, respectively. A nonparametric Sign Test of paired differences will be used to test the perceived skill level of the two groups for each skill. The null hypothesis is that the perceived skill competence is the same for the experienced employees as for the recently hired college graduates. The alternative hypothesis is that the perceived skill competence of the experienced employees is greater than the perceived competence level of the recently hired college graduates. The data set used for this test will be the set of differences calculated by subtracting each respondent's rating of recent college graduate competence from the respondent's competence rating of that skill for more experienced employees. Thus, the data set analyzed for each skill will consist of 78 observations generated from the (*Question 13* rating minus *Question 16* rating) difference calculated for each of the 78 respondents. Hypothesis test results and the associated P-values will be reported.

The hypothesis tests described above will be performed to detect significant differences between perceived competence levels of experienced employees and recently-hired college graduates. It is important to note that the experienced workforce includes many college

graduates (although not exclusively). Also, the skills being rated are not technology-centered, thus reducing the possible impact of any generational factor that could produce a more favorable perception of recent college graduates. Considering these factors, it is expected that the respondents will perceive the experienced employees, as a whole, to be more competent than recently-hired college graduates at all (or nearly all) of the skills being rated. However, in order to determine if there is, indeed, a statistically-significant difference in perception, the Sign Tests described in this section will be performed.

While the conclusion of each Sign Test is important (particularly if it shows recent college graduates are perceived to be *more* competent in a specific skill), it is the set of P-values from the tests that will be especially helpful. The P-value for a hypothesis test can be thought of as the probability that the null hypothesis is true, based on the sample data collected (Levin & Fox, 2007). Thus, low P-values support rejection of the null hypothesis in favor of the alternative hypothesis. As described earlier, the alternative hypothesis is that for a particular skill, the experienced employees are perceived to be more competent than recent college graduates. So, for example, if the P-value for the *Leadership* skill Sign Test is .0001 and the P-value for the *Execution* skill Sign Test is .07 then the competence levels of the experienced employees and the recent college graduates are perceived to be more similar for *Execution* skills than for *Leadership* skills.

The logic just described will be used to compare the P-values generated from the Sign Tests in this section. Doing so will help identify the skills in which the perceived competence level of recent college graduates is relatively similar to the perceived competence level of experienced employees. Therefore, the P-values generated from the Sign Tests will be compiled and used to rank the skills by perceived level of competence of recently-hired college graduates



(from highest to lowest). The purpose of ranking the perceived skill competence-levels of recent college graduates is to develop a list of skills that are effectively developed in college (at least in a relative sense). This list of skills will be referred to as *college-effectiveness skills*. Table 15 contains the resulting list of college-effectiveness skills.

Table 15 List of college-effectiveness skills

Skill	Ranking
Change Management	1
Data Analysis	2
Written Communications	3

**College-Business interaction related to workforce-skills development.**

Analysis of the survey data in this section will focus on identifying opportunities to form college-business partnerships that will help develop workforce skills. The process of exploring the conditions for developing college-business partnerships will begin with a comparison of three lists of skills generated thus far.

***What is the environment for developing college-business partnerships?***

The analysis at this point has generated a list of urgently critical skills, a list of skills for which colleges are expected to have the most responsibility in developing (college-responsibility skills), and a list of skills effectively developed in college (college-effectiveness skills). These three lists will be compared in order to identify college-business partnership opportunities and to determine how to leverage community perceptions and college capabilities to effectively develop workforce skills.

Initially, the three lists were reviewed to see if there were any skills present in every list. A comparison reveals that there is no skill present in all three lists. The three lists will now be

examined to find any skills that only two of the three lists have in common. A skill found to be common between any two lists will have unique implications, as described below.

The lists were reviewed to identify skills that were only common between the urgently-critical skills and the college-effectiveness skills. However, a comparison of the two lists reveals that they have no skills in common.

The lists were then reviewed to identify skills that were only common between the list of urgently-critical skills and the list of college-responsibility skills. Examination of these two lists reveals that both include *Critical/Analytical Thinking* skills. Since this skill is not in the list of college-effectiveness skills, it is likely that college effectiveness in developing these skills is not commensurate with the level of responsibility that colleges are expected to have for developing them. Because the *Critical/Analytical Thinking* skill is not only an important skill in need of further development, but a skill that colleges are expected to develop, college-business partnerships that emphasize development of *Critical/Analytical Thinking* skills can have a significant impact on the community. Furthermore, better development of *Critical/Analytical Thinking* skills represents an opportunity for a college to enhance its reputation since this skill is expected of students graduating from its institution.

The final comparison of the lists was made to identify skills that were only common between the list of college-effectiveness skills and the list of college-responsibility skills. Examination of these two lists reveals that both include *Written Communications* skills. Thus, colleges are not only perceived to be relatively effective at developing *Written Communications* skills, but are expected to have a primary responsibility for doing so. Therefore, even though *Written Communications* skills do not appear in the list of urgently critical skills, colleges run the

risk of failing to meet community expectations if they do not continue to effectively develop *Written Communications* skills in their students.

The skills found to be common between any two of the three lists compared will be considered *context-specific critical skills*. All of these critical skills will be important to consider when building college-business partnerships to develop workforce skills.

### ***How can colleges help businesses develop workforce skills?***

The analysis will now focus on survey *Question 17*, which relates to effective training methods and how colleges and businesses can work together to more effectively develop workforce skills. *Question 17* provided a list of nine actions that colleges could take and asked the respondents “If colleges were to take the following actions, how effective would each be in helping your organization develop/improve workforce skills?” For each action listed, the respondents were asked to provide their opinion of effectiveness as follows: 1 (*Ineffective*), 2 (*Minimally Effective*), 3 (*Moderately Effective*), 4 (*Very Effective*), 5 (*Most Effective*). The frequencies of 5 (*Most Effective*) responses for each of the actions were compared to determine the top three actions by colleges that were perceived by the respondents to work well for developing workforce skills.

Table 16 contains the actions by colleges that were perceived to be most effective in helping businesses develop workforce skills. It is important to note that the top two actions, taken together, involve the college not only providing instruction, but gathering input and learning from community and business organizations about what skills might help the community.

Table 16 Actions by Colleges that are Perceived to be Most Effective in Helping Businesses Develop Workforce skills

Action	Ranking
Offer targeted seminars to develop a specific skill	1
Gather more input from community/business organizations regarding the skills needed by graduates and course topics of interest	2
Expand and promote internship programs	3 (tie)
Link employees to service-learning or community project opportunities to apply skills learned	3 (tie)
Provide more flexibility in time and location that courses are offered	3 (tie)

***How can businesses help colleges develop workforce skills?***

*Question 18* asked “How can organizations like yours most effectively help local colleges develop workforce skills in the future workforce?” A list of seven possible actions was listed, from which the respondents were instructed to choose at least one. An *Other* option with space for open-ended text was provided in the event that the respondent wanted to suggest another course of action. However, only three respondents suggested other courses of action. The frequency with which each course of action was chosen was tabulated.

Table 17 contains the list of actions selected most often by the respondents. All of the actions listed in Table 17 were selected by at least half of the respondents. These preferred actions should be noted for further consideration when specific college-business partnership opportunities are explored. These preferred actions suggest that businesses see much value in providing input regarding the skills taught by colleges, and that they also see much value in providing opportunities for students to apply, in a real-world environment, what they are learning in the classroom.

Table 17 How can organizations like yours most effectively help local colleges develop/improve workforce skills in the future workforce?

Action	Ranking
Offer internships to current students	1
Suggest real-world scenarios/applications related to the course material	2
Offer input regarding curriculum development	3

**Effective training methods.**

In developing a response to Research Question 2, the final issue to be investigated using the survey data is the issue of effective training methods. The survey data was analyzed to provide insight into which training methods were perceived to be effective and the frequency with which each training method is being used. The two supporting questions below will analyze responses from an organizational perspective and from an individual perspective.

***Which training methods are effectively used by businesses?***

*Question 19* gathers information regarding the methods actually used by respondent organizations to develop employee workforce skills. This question asks “Which of the following training methods are used by your organization?” For each of the 13 methods listed for providing training, the respondents were asked to provide their opinion of effectiveness as follows: 0 (*Not Used At All*), 1 (*Used: Ineffective*), 2 (*Used: Minimally Effective*), 3 (*Used: Moderately Effective*), 4 (*Used: Very Effective*), 5 (*Used: Most Effective*). The frequency of respondents indicating that each training method is used is shown in Table 18.

Table 18 shows that the three most frequently used training methods are *On-the-job training*, *Short seminar/lecture (taught by internal staff)*, and *Internship program*. However, *Question 19* also gathered information on perceived effectiveness of each training method. Such

information would be very useful in helping colleges identify training methods that would be received most favorably by businesses as partnerships are developed.

Table 18 Training Methods Used

Which of the following training methods are used by your organization?	Frequency of Respondents	Rank
On-the-job training	74	1
Short seminar/lecture (taught by internal staff)	68	2
Internship program	59	3
Webinars/podcasts/social media	57	4
Subject matter expert/consultant brought in to provide extended training	56	5
Short seminar/lecture (taught by consultant or college instructor)	55	6.5
Work-related group project	55	6.5
Reimbursing employees for an approved college course	52	8.5
Online training course	52	8.5
Multi-day seminar (taught by consultant or college instructor)	46	10
Multi-day seminar (taught by internal staff)	45	11
Self-paced, informal individual study	42	12
Mentoring program	38	13

With this goal in mind, Table 19 has been constructed to show the percentage of respondents rating each training method as a 5 (*Most Effective*), and the percentage of respondents rating each training method as a 1 (*Ineffective*). The calculated percentages for each training method only considered the responses indicating that the training method was being used. In order to generate an indicator of perceived training method effectiveness that takes into account positive perceptions and negative perceptions, a ratio of the frequency of 5 (*Most Effective*) ratings to the frequency of 1 (*Ineffective*) ratings was calculated. This ratio appears in the last column of Table 19. A ratio greater than one indicates that the number of respondents

having a very positive perception of a training method’s effectiveness exceeds the number of respondents having a very negative perception of that training method’s effectiveness.

Therefore, training methods with the highest ratios are the training methods perceived to be most effective and ratios with the lowest ratios are the training methods perceived to be least effective.

Table 19 Perceived Effectiveness of Training Method

Training Method	Percent Rating Training Method as Most Effective	Percent Rating Training Method as Ineffective	Ratio of ‘Most Effective’ Responses to ‘Ineffective’ Responses
On-the-job training	16.2	1.4	12.00
Short seminar/lecture (taught by internal staff)	7.4	1.5	5.00
Internship program	10.2	1.7	6.00
Webinars/podcasts/social media	3.5	12.3	0.29
Subject matter expert/consultant brought in to provide extended training	7.1	5.4	1.33
Short seminar/lecture (taught by consultant or college instructor)	9.1	3.6	2.50
Work-related group project	7.3	5.5	1.33
Reimbursing employees for an approved college course	21.2	0	-
Online training course	3.8	11.5	0.33
Multi-day seminar (taught by consultant or college instructor)	2.2	4.3	0.50
Multi-day seminar (taught by internal staff)	4.4	8.9	0.50
Self-paced, informal individual study	9.5	7.1	1.33
Mentoring program	7.9	7.9	1.00

Table 19 shows that the training methods perceived to be the most effective are *Reimbursing employees for an approved college course*, *On-the-job training*, and *Internship*

*program*. These three training methods will be referred to as the top three *effective organizational-training methods* used by organizations in their effort to develop workforce skills. The training methods perceived to be the least effective are *Webinars/podcasts/social media*, *Online training course*, and a third-place tie between *Multi-day seminar (taught by consultant or college instructor)* and *Multi-day seminar (taught by internal staff)*.

In order to gain additional insight into training method perceptions and practices, the relationship between a training method’s frequency of use and its perceived effectiveness is shown in Table 20.

Table 20 Training Method Use and Perceived Effectiveness

Which of the following training methods are used by your organization?	Frequency of Respondents	Rank (by frequency of use)	Rank (by perceived effectiveness)
On-the-job training	74	1	2
Short seminar/lecture (taught by internal staff)	68	2	4
Internship program	59	3	3
Webinars/podcasts/social media	57	4	13
Subject matter expert/consultant brought in to provide extended training	56	5	7
Short seminar/lecture (taught by consultant or college instructor)	55	6.5	5
Work-related group project	55	6.5	7
Reimbursing employees for an approved college course	52	8.5	1
Online training course	52	8.5	12
Multi-day seminar (taught by consultant or college instructor)	46	10	10.5
Multi-day seminar (taught by internal staff)	45	11	10.5
Self-paced, informal individual study	42	12	7
Mentoring program	38	13	9



It is logical to expect that training methods perceived to be very effective would be associated with a high frequency of use. Conversely, training methods perceived to be very ineffective would be expected to have a low frequency of use. Table 20 shows that two training methods (*Webinars/podcasts/social media* and *Reimbursing employees for an approved college course*) depart significantly from this type of relationship.

The *Webinars/podcasts/social media* training method is used very frequently even though its perceived effectiveness is the lowest of all training methods. Considering the relatively low cost of webinars, podcasts and other internet-based training, it is possible that such a training method may be used more often because of cost factors rather than perceived effectiveness. Convenience may also be a factor. For the *Reimbursing employees for an approved college course* training method, however, the perceived effectiveness is the highest of all training methods while its frequency of use is in the lower half of all training methods used. Is cost of tuition a contributing factor? Do business organizations have many training needs for which an applicable college course/curriculum cannot be found?

Determination of the possible causes of these two unusual relationships between frequency of use and perceived training effectiveness is beyond the scope of this dissertation. However, the fact that the *Webinars/podcasts/social media* training method is frequently used while perceived to be ineffective, and the fact that the *Reimbursing employees for an approved college course* training method is thought to be very effective but not used as often, are important findings to consider when exploring possible college-business partnerships.

### ***Which training methods are effectively used by individuals?***

Responses to *Question 21* provide more insight into effective training methods from a personal, individual-impact perspective. After respondents were asked to choose which skill has

been most helpful in their professional career (*Question 20*), *Question 21* asked “How did you learn the workforce skill chosen in *Question 20*?” Open-ended responses to this question were allowed, thus providing a potentially deeper understanding of effective training methods from a personal perspective. The responses were categorized by the type of learning environment described. Associated frequencies for each type were tabulated to determine if there was a predominant learning environment that respondents attributed to their learning of important workforce skills.

The learning environments described in the responses to *Question 21* were categorized as *formal*, *individual experience*, or *social experience*. The formal learning environment is considered to be the traditional classroom (or online) lecture/discussion provided by an educational institution. Any response that includes a reference to formal training or an educational institution was counted in the formal category. The other two learning environments are experience-based and outside of the realm of formal training. Responses that did not involve formal training were classified as social experience if the response referred to any social interaction (teamwork, group projects, discussions) as a part of the experience. The remaining experience-related responses were classified as individual experience. Based on this classification approach, Table 21 was constructed.

Table 21 shows the most frequently occurring learning environment is individual experience (with a frequency of 32). It is important for colleges to note, therefore, that the skill that the respondents perceived to be most helpful to their professional career was learned through individual experience.

Table 21 Most Helpful Skill and the Environment in Which It Was Learned

Which workforce skill have you found to be most helpful in your professional career?	Frequency of Respondents			Total
	<i>Learned by Formal Training</i>	<i>Learned by Individual Experience</i>	<i>Learned by Social Experience</i>	
Critical/Analytical Thinking	9	5	3	17
Teamwork/Collaboration	3	3	5	11
Customer Orientation	1	3	2	6
Active Listening	1	3	1	5
Oral Communications	2	3	0	5
Time Management	1	4	0	5
Written Communications	4	0	1	5
Leadership	2	2	1	5
Execution	1	2	1	4
Change Management	0	4	0	4
Decision Making	2	1	0	3
Prioritization, Focus	0	1	1	2
Data Analysis	0	0	0	0
<b>Total</b>	<b>26</b>	<b>32</b>	<b>15</b>	<b>73</b>

*Note:* Frequency total of this table is less than total survey responses due to missing responses to Question 21.

## **CHAPTER 5**

### **SYNTHESIS**

#### **Introduction**

The review of literature provided in Chapter Two reflected the value that businesses place on workforce skills, the impact of effectively developing a skilled workforce, and the emphasis on a college education to promote adequate development of skills. Chapter Three outlined a methodology for exploring the perspective of workforce stakeholders in the Chattanooga region. Following that methodology, Chapter Four explored issues such as the workforce skills considered to be urgently critical, the responsibility and effectiveness of colleges in developing workforce skills, college-business interaction, and business training practices and perceptions. A key result, the list of urgently critical skills, was determined by identifying the skills considered to be most critical and most in need of additional skill development.

Chapter Five will initially focus on the four skills identified as urgently critical. Operational definitions of these skills will be provided, the relationships between these skills will be considered, and a framework for development of these skills based on a social cognitive theory of learning will be discussed.

The focus of the discussion will then expand to consideration of analysis findings that relate to college-business partnerships to develop workforce skills in general. A framework for developing such partnerships will be informed by the CRS findings. The CRS findings will also

guide selection of an appropriate leadership theory to lead the effort to build a college-business partnership that can effectively support workforce-skill development.

### **Refined Concept of Each Urgently Critical Skill**

Table 13 lists the urgently critical skills as active listening, leadership, critical/analytical thinking, and customer orientation. There are a variety of definitions for each of these terms. Therefore, in order to promote a more targeted discussion, at least one definition related to each skill will be presented to further refine what is meant by each urgently critical skill.

#### **Active Listening**

Active listening is characterized by an effort that extends well beyond the mere collection of facts or the comprehension of words being spoken. According to Dubrin (2010), “an active listener tries to grasp both facts and feelings. Observing the group member’s nonverbal communication is another part of active listening” (p. 303).

#### **Leadership**

Leadership is a broadly-used term that is defined in a variety of contexts; business, political, and educational. There is even a definition in the context of quality assurance. Therefore, multiple definitions will be provided. Based on these definitions, some of the key components of leadership will be identified in order to frame the discussion of developing leadership skills. The first three views of leadership presented below are views provided earlier in this paper. A fourth definition will be included to provide an additional context within which leadership can be viewed.

Dubrin (2010) defines leadership as “interpersonal influence, directed through communication toward goal attainment” (p. 3). Kouzes and Posner (2002) describe it as “a

relationship between those who aspire to lead and those who choose to follow” (p. 20). Rost (1995), in his discussion of leadership and ethics, clearly recognizes the critical role of relationships in leadership, but he is careful to avoid confining leadership relationships to a superior-subordinate context. Rost (1995) claims that “leadership is not what leaders do but what leaders and collaborators do together – the interaction that goes on among them as they propose significant changes that reflect their mutual purposes” (para. 10). Finally, in the context of the quality assurance field, Goetsch and Davis (2010) define leadership as “the ability to inspire people to make a total, willing, and voluntary commitment to accomplishing or exceeding organizational goals” (p. 178).

As these definitions suggest, one of the most fundamental components of leadership is relationships. Even when defined in the context of the technically-oriented field of quality assurance, relationships still play a central role in leadership. Another common component expressed in these definitions is the effort to achieve a goal.

### **Critical/Analytical Thinking**

To begin discussion of the meaning of critical/analytical thinking, reasoning will be provided to explain reducing the term to *critical thinking*. The word *analytical* is defined as “reasoning or acting from a perception of the parts and interrelations of a subject” (American Heritage, 2000, p. 65). Halpern (1999) states that “critical thinking refers to the use of cognitive skills or strategies that increase the probability of a desirable outcome. Critical thinking is purposeful, reasoned, and goal-directed” (p. 70). Therefore, it can be argued that for the purpose of developing an operational definition of critical/analytical thinking, use of the term *critical thinking* will result in no significant change in the essence of its meaning. Thus, the term *critical thinking* will be used interchangeably with the term *critical/analytical thinking*.

Lipman (1988) states that “critical thinking is thinking that both employs criteria and that can be assessed by appeal to criteria” (p. 39). Furthermore, Ennis (1997) describes critical thinking as “reasonable reflective thinking focused on deciding what to believe or do” (p. 2). However, an even more detailed description of critical thinking is provided by Barnet and Bedau (2005):

Critical thinking requires us to reflect further, trying to support our position *and also* trying to see the other side. One can almost say that the heart of critical thinking is *a willingness to face objections to one’s own beliefs*, a willingness to adopt a skeptical attitude not only toward authority and toward views opposed to own but also toward common sense – that is, toward the views that seem obviously right to us. (p. 9)

In order to ensure a more accurate understanding of critical thinking, it is helpful to note the illustration that Barnet and Bedau (2005) offer as they explain what critical thinking is not:

If we assume we have a monopoly on the truth and we dismiss as bigots those who oppose us, or if we say our opponents are acting merely out of self-interest and we do not in fact analyze their views, we are being critical but we are not engaged in critical thinking. (p. 9).

This illustration makes an important distinction in order to prevent critical thinking from having a negative connotation.

Incidentally, for anyone observing much of the public discussion of current social and political issues, this last point may seem to be a disturbingly accurate description of the behavior exhibited in public discourse today. It is somewhat ironic that many of the attitudes and actions of critical thinking (the questioning of assumptions, reasoned judgment, and consideration of other viewpoints) are precisely the antidote for such an extremely critical atmosphere.

## **Customer Orientation**

Business and quality management resources will be consulted to develop an operational definition of the term *Customer Orientation*. *Customer Focus* is a term similar in concept to the

term *Customer Orientation*, and is commonly found in business and quality literature (Daft, 2003; Goetsch & Davis, 2010; Gee, Richardson, & Wortman, 2010). Therefore, the characteristics and components of the term *Customer Focus* will be considered an accurate description of the term *Customer Orientation*. Therefore, the term *Customer Focus* will be used interchangeably with the term *Customer Orientation*.

Daft (2003) defines customers as “people and organizations in the environment who acquire goods or services from the organization” (p. 80). In its Certified Manager of Quality / Organizational Excellence Body of Knowledge, the American Society for Quality (2012) includes a section on “customer-focused organizations” (sec. V). In this section, they include treating customers respectfully, and seeking to understand customer needs, perceptions and expectations as part of a customer-focus effort (American Society for Quality, 2012).

### **Urgently Critical Skills Viewed Within a Framework of Social Cognitive Theory**

Social cognitive theory provides a valuable framework for describing and guiding the development of the workforce skills that have been determined to be urgently critical. More specifically, the three causal factors (personal, behavioral, and environmental) described in Bandura’s (1989) triadic reciprocity will provide a context for examining the impact of each of the urgently critical skills and their relationship to each other. The nature of these relationships can have an instructional-design impact as decisions are made regarding the sequence in which the skills are to be developed (or whether it might be preferable to develop these skills concurrently).

Considering the refined concepts of each skill presented above, a notable distinction is made between active listening and the other three urgently critical skills. While skills in critical thinking, leadership, and customer focus all have a very broad range of applicability, there is still



a context within which each skill is most notably applied. Critical thinking is often associated with problem-solving (Halpern, 1999) or making decisions (Ennis, 1997), and is sensitive to context (Lipman, 1988). Leadership is often associated with social interaction that results in influencing people to work toward a goal (Daft, 2003). Customer-focus applies primarily in the context of interacting with people in a provider-receiver context. Active listening, however, is unique in the sense that this skill can be applied in virtually every social interaction, regardless of context.

### **Relationship between Active Listening and Leadership**

According to a survey by the American Management Association (2003), communication is the most important leadership skill. Furthermore, Dubrin (2010) states that “listening is a fundamental management and leadership skill... For a leader to support and encourage a subordinate, active listening is required” (p. 358).

Active listening behavior exhibited by anyone in an organization, but particularly a leader, can exert a social influence on others and create an environment that encourages open dialogue in the organization. The view of leadership as being relationship-based, and even collaborative in Rost’s (1995) view, puts it in the domain of what Bandura’s (1989) social cognitive theory would refer to as environment. Furthermore, leadership affects, and is affected by, the leader-follower relationship, and thus shapes the environment in which social interaction takes place. In the context of instructional leadership, Knowles (1980) illustrates the connection between listening and relationships when he states that “probably the behavior that most explicitly demonstrates that a teacher really cares about students and respects their contributions is the act of really listening to what the students say” (p. 47).

## **Relationship between Active Listening, Critical Thinking, and Leadership**

According to Halpern (1999), critical thinking is “the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions” (p. 70). Dubrin (2010) states that “leaders cannot identify problems unless they listen carefully to group members” (p. 358). Thus, one’s active listening behavior leads to the identification of problems, which can then call upon one’s cognition (critical thinking) to solve. If a positive outcome is achieved, then one’s awareness of the positive outcome resulting from the active listening behavior will likely result in its continuance. This interaction illustrates the bi-directional relationship between behavior and personal (specifically, cognitive) factors.

The impact of critical thinking skills on active listening is additional evidence of the bidirectional causality described by Bandura (1989). Halpern (1999) states that “critical thinking refers to the use of cognitive skills or strategies that increase the probability of a desirable outcome. Critical thinking is purposeful, reasoned, and goal-directed” (p. 70). Schunk (2008) states that “goals give people ‘tunnel vision’ to focus on the task, select task-appropriate strategies, and decide on the effectiveness of their approach, all of which are likely to raise their performance” (p. 99). Therefore, someone using their critical thinking skills is likely to be more cognitively engaged in a conversation, which would promote active listening behavior.

Critical thinking has an even more pronounced effect on active listening when one considers how egocentricity affects listening behavior. Adler (1992) states that “one common reason for poor listening is the belief – usually mistaken – that your own ideas are more important or valuable than those of others” (p. 95). Nosich (2005), however, states that “one of the most valuable things to be gained from critical thinking is an ability to see the egocentricity

of our own thinking” (p. 25). Therefore, it can be argued that the personal (cognitive) skill of critical thinking promotes active listening behavior.

### **Relationship between Customer Focus, Active Listening, and Critical Thinking**

Treating customers respectfully, and seeking to understand customer needs, perceptions and expectations is part of a customer-focus effort according to the American Society for Quality (2012). It is important to note that, from a social cognitive theory standpoint, these behaviors are effects caused by the cognitive process of focusing one’s attention on the customer.

The intentional effort to focus on the customer contributes to a heightened level of attention that will likely lead to active listening behavior (assuming such a skill has been developed). Active listening creates a respectful social environment that encourages positive social interaction (Knowles, 1980). Thus, active listening and the positive social environment it helps create, result in a more accurate understanding (cognition) of customer thoughts and feelings.

Such a process described thus far would represent what Argyris (1994) calls *single-loop learning* because it seeks only to understand the customer’s thoughts and feelings as espoused, without necessarily exploring hidden or unspoken assumptions and perceptions that may provide context for a greater understanding. Furthermore, there is no consideration of one’s assumptions and perceptions that may act as filters or barriers to an understanding of the customer’s needs and expectations.

If customer behavior is not consistent with the thoughts and feelings presented, then according to Argyris (1994), a second iteration of learning called *double-loop learning* would need to take place to question the assumptions made that contributed to inconsistent customer-behavior. Given the fact that this inconsistency could be viewed as a problem to be solved by

questioning one's assumptions, critical thinking skills would play an important role in this process. Thus, double-loop learning illustrates the potential interaction between active listening skills and critical thinking skills that can take place to leverage the positive impact of customer-focus efforts.

### **Instructional Design Regarding Urgently Critical Skills**

The instructional design for developing skills in active listening, critical thinking, leadership, and customer focus can benefit from consideration of the aforementioned causation relationships. However, before these relationships are considered further, it is necessary to consider Bandura's (1989) important point about the interpretation of the bidirectional nature of these causation relationships:

Reciprocal causation does not mean that the different sources of influence are of equal strength. Some may be stronger than others. Nor do the reciprocal influences all occur simultaneously. It takes time for a causal factor to exert its influence and activate reciprocal influences. (pp. 2-3)

The relationship between active listening, critical thinking, and leadership is somewhat illustrative of this point. As noted earlier, active listening is a key enabler of critical thinking and effective leadership. Therefore, developing active listening skills early on in the skill-development process would seem to leverage the impact of efforts to develop the other skills.

### **Building College-Business Partnerships to Develop Critical Workforce Skills**

Analysis of the Chattanooga Region Survey (CRS) has resulted in a list of urgently critical workforce skills in the Chattanooga region. Furthermore, the value of college-business partnerships in developing workforce skills has been previously established in this paper. The next step is to consider the CRS findings in order to address Research Question 2, which asks

“How can colleges and businesses partner to effectively develop critical workforce skills in the Chattanooga region?”

The response to this question will be based on a synthesis of the CRS survey findings and leadership theory. Issues regarding the importance of credibility and competence, and a leadership theory that supports effective partnership development, will first be discussed to provide a context for the response. Furthermore, the response will be provided in a framework where the college takes a leadership role in initiating development of the college-business partnership.

### **The Impact of Credibility and Competence on Leadership and Learning**

Due to their recognized role in educating the community, colleges are in a position to take a leadership role to engage the community in the effort to develop workforce skills. In characterizing the results from a survey on characteristics of admired leaders, Kouzes and Posner (2002), state that “credibility is the foundation of leadership” (p. 23). Describing the results of their survey, Kouzes and Posner (2002) point out that that being competent and honest were two of the top four characteristics chosen by respondents. Thus, for a college to most successfully exercise leadership in developing urgently critical skills, it must build (or maintain) credibility by demonstrating competence in, and authentic use of, those skills.

If a college’s leadership role is viewed in terms of collectively acting as a change agent to encourage adoption of an innovative approach to developing workforce skills, then the importance of credibility is no less acute. According to Rogers (2003), a change agent “influences clients’ innovation-decisions in a direction deemed desirable by a change agency” (p. 366). Rogers (2003) then suggests the importance of credibility when he states that “change

agents' success in securing the adoption of innovation by clients is positively related to credibility in the clients' eyes" (p. 385).

Finally, shifting briefly from viewing the college as exercising leadership, to viewing a college as a facilitator of learning, the critical importance of credibility and competence remains undiminished. Schunk (2008) states that "behaviors that successfully deal with the environment command greater attention than those that do so less effectively.... Model competence is inferred from the outcomes of modeled actions (success and failure) and from symbols that denote competence" (p. 94). Therefore, a college that successfully models use of the skills being taught would provide a competent model to better promote learning of those skills.

Such modeling of the skills by the college would also lend credibility to the implied advocacy of their importance and practical value. For example, the use of critical thinking skills to solve a problem that arises in the classroom, or to explore an issue during formation of a college-business partnership, demonstrates very clearly that critical thinking skills are valued. Believing in the practical value and relevance of a skill to one's life experience is an important factor affecting one's interest in learning that skill, particularly for adult learners (Knowles, 1980).

As just described, credibility and competence have a positive impact on leadership effectiveness, and competent models have a positive impact on a learning experience. A synthesis of this knowledge would suggest that any college taking a leadership role to develop workforce skills should clearly apply (model) those same workforce skills as it builds college-business partnerships to achieve that goal.

## **Applying Leadership Theory When Building College-Business Partnerships**

While applying active listening, critical thinking, and customer focus skills can present challenges to a college as it builds partnerships with businesses, such challenges are primarily localized to specific conversations, specific problems, or specific customer issues, respectively. Application (or modeling) of the fourth urgently critical skill, leadership, is somewhat problematic, however, because of the expanse of its domain and the variety of theories governing its composition and application.

Two possible responses to the challenge of applying leadership skills will be briefly considered. The two possible responses are to select multiple leadership theories to apply, or to select one theory based on personal (or institutional) preference.

If a college chooses multiple leadership theories to apply and model as it initiates efforts to build college-business partnerships, then the skills, concepts, and techniques most prominent in the chosen theories would be reflected in the institution's behavior. However, such behavior might seem contrived, and lack authenticity if not a part of an overarching theory of what leadership is and how it should be enacted. Furthermore, a fragmented application of multiple theories and a variety of skills would prevent development of any cogent view of leadership. Such an approach could result in the acceptance or rejection of a leadership theory without the more conceptually complete view necessary to fully render a judgment of its value and applicability.

Alternatively, the selection of one leadership theory based on personal (or institutional) preference would provide more of an authentic application of leadership skills and would reduce, if not eliminate, the fragmented, possibly contradictory views resulting from a multiple-theory approach. Unfortunately, if this approach is selected, the college would be unilaterally

establishing parameters within which it would be asking its potential business partners to operate. Not only would this approach result in a missed opportunity to benefit from a business perspective, it could possibly be perceived by the business community as an effort to establish an educational hegemony regarding leadership.

### **A Leadership Theory that Supports College-Business Partnership Development**

The unacceptability of the above two approaches suggests that a change in perspective is necessary in order to select a leadership theory that would effectively support development of college-business partnerships. Instead of starting the process of determining an applicable leadership theory by focusing on leadership, a learning perspective was chosen as the departure point. It is here where the confluence of learning theory and the list of urgently critical skills provided a striking, and unexpectedly clear, direction regarding a leadership theory that could effectively guide development of college-business partnerships.

As stated earlier, Bandura's (1989) concept of triadic reciprocity, involves three factors (personal, behavioral, and environmental) that interact as a part of the learning process. One of the most prominent components of the personal factor is cognition and one of the most prominent components of the environmental factor is the influence of social interaction. These factors were used earlier to explore the relationships between each of the urgently critical skills, but will now be used to examine the list of skills in a more holistic manner. Specifically, the examination will consist of determining the respondent values and beliefs that are reflected in their choice of the urgently critical skills. As necessary to provide context to this examination, the meaning and implication of each skill will be briefly reviewed.

Active listening involves a very attentive focus on what the speaker is saying, how it is being said, the emotion being conveyed, and any accompanying body language, in order to fully



understand what the speaker is saying. Greenleaf (1970) states that “true listening builds strength in other people” (p. 10). Therefore, selection of active listening as an urgently critical skill suggests that respondents believe in the importance of understanding and supporting others.

As mentioned earlier, the American Society for Quality (2012) includes treating customers respectfully, and seeking to understand customer needs, perceptions and expectations as part of a customer-focus effort. Therefore, the selection of customer focus as an urgently critical skill suggests that respondents believe in the value of service to others.

Where active listening and customer focus both promote behavior that places others at the center of attention, critical thinking has more of an impact that reduces one’s self-centeredness, or at least a reduction in one’s sole focus on one’s own viewpoint. According to Nosich (2005), “one of the most valuable things to be gained from critical thinking is an ability to see the egocentricity of our own thinking” (p. 25). Therefore, the selection of critical thinking as an urgently critical skill suggests that respondents believe in the value of considering others’ viewpoints and the importance of not imposing one’s unrecognized, personal assumptions on others.

As described earlier, leadership, the fourth urgently critical skill, is commonly viewed to involve someone exerting social influence to elicit support from others to achieve a goal (Daft, 2003; Goetsch & Davis, 2010). Therefore, the selection of leadership as an urgently critical skill suggests that respondents believe in the value of someone taking initiative to define a goal and working with others to achieve that goal.

The underlying beliefs inferred from respondent selection of the first three urgently critical skills can be summarized as supporting others, serving others, and considering the viewpoints of others. These beliefs may seem somewhat incompatible (or at least not consistent)

with a belief in the importance of an individual taking initiative, defining a goal, and leading others to achieve that goal.

A form of leadership does exist, however, to reconcile the supposed incompatibility of serving and leading. Greenleaf (1970), in his essay, *The Servant as Leader*, describes a leadership borne out of a desire to serve:

The servant-leader *is* servant first.... It begins with the natural feeling that one wants to serve, to serve *first*. Then conscious choice brings one to aspire to lead. He is sharply different from the person who is leader first, perhaps because of the need to assuage an unusual power drive or to acquire material possessions. (p. 7)

Such a view would, of course, be very compatible with a belief in serving others. According to Greenleaf (1970), a servant-leader still takes the initiative to define a goal and influences others to achieve that goal, but such an effort is made to serve “another’s highest priority needs” (p. 8).

The remarkable consistency between the servant-leader theory of leadership and the belief system inferred from the CRS results, suggests that much could be gained by a college adopting this theory when leading an effort to build partnerships with businesses. Acting as a servant-leader would model the skills valued by businesses, thus providing a model with a high degree of similarity. According to Schunk (2008), “observing similar others succeed raises observers’ self-efficacy and motivates them to try the task” (p. 97).

Secondly, the consistency between the servant-leader theory applied by the college and the belief system of businesses would result in a high degree of homophily, which is defined by Rogers (2003) to be “the degree to which two or more individuals who interact are similar in certain attributes such as beliefs...” (p. 19). What is particularly important about a high degree of homophily is that, according to Rogers (2003), “more effective communication occurs when two or more individuals are homophilous” (p. 19). Effective communication is essential when building a partnership. It should be noted that a high degree of homophily may be an inhibiting

factor when the college-business partnership calls for diffusion of an innovative idea (Rogers, 2003). However, considering other factors that may reduce homophily, such as a difference in education level or socioeconomic status, the risk of such a negative impact is considered to be minimal.

### **Applying the Servant-Leader Theory of Leadership**

A critically important point must be made to allay possible concerns that college faculty may have about applying a servant-leadership approach. Application of this leadership theory does not relegate academic institutions to simply doing what it is told by the community it serves. On the contrary, it develops an understanding of the community and strengthens relationships that enable the institution to exert more influence as it maintains the academic rigor and integrity of the institution. Greenleaf (1970) is very explicit in making this point when he states that “The servant as leader always empathizes, always accepts the person but sometimes refuses to accept some of the person’s effort or performance as good enough” (p. 13).

An application of this point is illustrated by the difference between vocational training and a college education. Vocational training is geared more toward learning how to perform a specific task and is often a key focus of businesses. A college education is focused more on broadening one’s worldview, along with developing a skill-set and the capacity for knowing when and how to apply those skills. Therefore, in responding to the needs of businesses, which may take a more vocation-centric view, a college acting as an institutional servant-leader is obligated to adhere to its organizational mission and performance standards that keep the essence of a college education intact. To do otherwise, would not be servant-leadership.

## **Recommendations Based On CRS Findings**

An important part of servant-leadership is the effort to understand and address the needs of others (Greenleaf, 1970). Therefore, in order to assist a college that chooses to apply the servant-leader theory of leadership, recommendations based on the CRS findings will be offered. However, as noted earlier, a servant-leader's obligation to apply mission-related standards and performance standards requires the college leading the partnership development effort to apply due diligence in its consideration of these findings. In fact, a college servant-leader's uncritical acceptance of these recommendations would neither serve nor lead.

### **High-Priority Skills**

Skill-development efforts that focus on active listening, customer focus, critical thinking, and leadership would have the greatest impact on meeting the workforce-skill needs of the general business community. According to CRS findings, these skills were perceived to be among the most critical across a wide range of industries and organization sizes, and were also perceived to be most lacking in employees.

It should be noted that two additional skills, oral communication and teamwork/collaboration, were also perceived to be community-wide critical skills but were excluded from the list of urgently critical skills simply because the employee level of competence in these skills was perceived to be relatively high. Other studies, however, have identified one or both of these skills as substantially lacking in the workforce (Ready Indiana, 2010; Alliance for Education, Chaffey College, Crafton Hills College, & San Bernardino County, 2005; Corporate Voices for Working Families, 2010). Therefore, further study is suggested to investigate if the CRS results reflect a common perception of the Chattanooga business community and, if so, whether that perception is an accurate assessment of actual

competence. Regardless, CRS findings clearly indicate that oral communication and teamwork/collaboration should be among the list of high-priority skills.

### **Important Competencies to Include in Curriculum Design**

In addition to being high-priority skills, critical thinking and oral communication were also perceived to be among the skills colleges are most responsible for developing. While this finding indicates the importance of focusing on these skills at the college level, it commands even greater attention when considered along with the fact that these skills are not among the top skills that colleges are perceived to most effectively develop. Regardless of whether this perception accurately reflects reality, the important point is that for colleges that do not currently include critical thinking and oral communication as essential skills in their curriculum, the CRS findings clearly suggest that they consider doing so.

### **Benefits of a College Education**

There are many economic benefits and health benefits to a college education, and many of these were noted earlier in this paper. As expected, there are specific skill-related benefits of a college education as well. Identifying the skills that they are perceived to best develop provides colleges an important tool in enrollment efforts and in outreach to the business community. CRS findings suggest that skills related to change management, data analysis, and written communication are the skills that colleges are perceived to most effectively develop.

An important point should be made about the skill identified as change management. While this skill is listed as the one most effectively developed by colleges, it was also the skill that was by far the most frequently identified by respondents as needing to be more clearly defined. Therefore, further study is necessary before actionable information can be gleaned from

this result. However, this finding may indicate that a broader, albeit less defined, characteristic of adaptability is what the business community sees in college graduates.

### **Partnership Development**

The CRS findings relate to several aspects of building college-business partnerships to develop workforce skills. As suggested earlier, leadership to develop a partnership can come from either type of organization. However, the issues presented below will continue to be in the context of the college taking the initiative and exercising leadership. With this in mind, recommendations will be made to colleges regarding the engagement of businesses, the possible role of a business in the partnership, and training methods compatible with business perceptions and practices.

#### **Engaging businesses.**

Businesses are clearly interested in developing workforce skills (Accenture High Performance Workforce Study, 2010; Partnership for 21<sup>st</sup> Century Skills, 2006; Corporate Voices for Working Families, 2010; National Association of Manufacturers, 2005). However, most businesses face time and resource demands that crowd out possible projects or activities that do not address issues that are urgent and/or important to their bottom line. These conditions make it sometimes difficult to get businesses actively engaged in education partnerships, particularly considering that such an effort may not have an immediate or quantifiable return on investment. In order to fully engage businesses and encourage them to commit to an active partnership role in developing workforce skills, a college must focus on better understanding businesses and meeting their needs. In short, this involves finding out what skills businesses

value. Again, keeping in mind the servant-leadership view, this approach will be the natural inclination of a college acting as servant-leader.

A college-business partnership that focuses on developing skills in active listening, customer focus, critical thinking, and leadership, would likely gain the interest of most businesses since those skills were identified as urgently critical skills. Based on the CRS findings, focusing on development of critical thinking skills would seem to be the most effective. The CRS findings showed that colleges were viewed as having more responsibility to develop critical thinking skills than any other skill. Furthermore, from a personal-impact perspective, critical thinking skills were found to be most helpful, and were learned by formal training more than any other skill. Such findings present a compelling case for emphasizing development of critical thinking skills when devising a strategy for outreach and engagement.

#### **Possible business roles in the partnership.**

The CRS findings indicate that businesses are very willing to help colleges provide an experiential learning component to their students' learning experience. When asked how businesses could help colleges develop workforce skills, the top two responses were to offer internships and to provide real-world scenarios related to the course material. These results echo a common theme that various forms of experiential learning are highly valued by businesses as a training approach.

Businesses can play an important role in the college-business partnership by providing context for the experiential learning component of a course. Providing a context for the learning experience is also helpful when developing critical thinking skills. Lipman (1988) points out that critical thinking is context-sensitive. Therefore, in the absence of context, critical thinking skills are likely to be taught in a more orderly, scripted, classroom environment that does not

reflect the full range of complexity and challenges that members of the workforce might encounter.

Another possible role of businesses is to provide input regarding curriculum development. Such a role was the third most frequently selected course of action as a way to support development of workforce skills. While such a role can be very helpful, it also presents challenges to colleges and businesses as they negotiate and resolve differences between a training perspective and an education perspective.

### **Providing learning experiences consistent with business perceptions and practices.**

The three most frequently used training methods used by businesses are on-the-job training, short seminars/lectures taught by internal staff, and internship programs. Such usage of real-world or experiential approaches to training are consistent with other CRS findings that indicate a preference for a real-world context for learning. However, the frequent usage of short seminars/lectures taught by internal staff suggests that businesses still see value in the more traditional lecture-discussion method of instruction. Considering the frequent use of these training approaches, a college may find businesses receptive to short courses or seminars that help them learn how to leverage their on-the-job training and internships to maximize learning.

Colleges could even help businesses learn how to develop additional skills concurrently. For example, on-the-job training to detect product defects may also provide an opportunity for development of team skills and group decision-making as possible root causes are discussed and either accepted or rejected.

Two findings mentioned during the analysis phase warrant further discussion because they both point to actions that are quite inconsistent with perceptions. One finding is that businesses perceive reimbursement of employees for a college course to be more effective than



any other training method, yet such a training method is used less frequently than many other training methods. The second finding, equally inconsistent, is that webinars/podcasts and social media are used quite frequently while being perceived as the least effective of all training methods.

While these two findings clearly warrant further study, a possible explanation, based on another CRS finding, will be offered for consideration. According to CRS respondents, one of the most frequently preferred actions for colleges to take to help businesses develop workforce skills is for colleges to provide more flexibility in time and location that courses are offered. Flexibility in time and location is the hallmark of internet-based training while it is still not possible for many traditional course offerings. These facts may explain, at least partially, the seemingly inconsistent findings and may also suggest the primacy of flexibility in deciding on various training methods.

One last point to make regarding these two findings is that the course flexibility (in time and location) factor is confounded with the training-method-effectiveness factor, which means that there may be an interaction effect between the two factors. Furthermore, even if course flexibility has the impact suggested above, the issue of effectiveness of the two training methods is still a significant issue to be resolved. In addition to suggesting an issue that needs further study, the inconsistency of these findings may spawn innovative ideas for college-business partnerships that can increase the flexibility of college course offerings and improve the effectiveness of the learning experience as well.

### **Issues Recommended for Further Study**

Several issues requiring further study have been identified throughout this paper. The conditions, findings, context, and logic prompting the need for further study were, in some cases,

presented when the issue was identified. A brief description of these issues will now be provided:

- The CRS findings related to skill competence are based on a perception of skill competence. Further study should be done to compare perceived competence with objectively-measured skill competence.
- Teamwork/Collaboration skills and oral communication skills were deemed to be adequate relative to other critical skills, which is not consistent with some other surveys. The source of this discrepancy should be investigated to determine if it is due to a difference in geographic location, industry-mix, or other factors.
- Colleges were perceived to be very effective in developing change management skills, yet many respondents said that the term needed to be more clearly defined. A study to investigate what each respondent's concept of change management is would add more meaning to interpretation of this finding.
- Businesses perceive reimbursement of employees for a college course to be more effective than any other training method, yet such a training method is used less frequently than many other training methods. Further study is needed to determine if flexibility (in time and location) of course offerings, and cost could be factors that explain this inconsistency, or if there are other factors(s) exerting substantial influence.
- Webinars/podcasts and social media are used quite frequently in spite of being perceived as the least effective of all training methods. Further study is needed to determine if the cost and flexibility (in time and location) of internet-based training could be factors that promote frequent usage of this training method,

whether poor training outcomes result in the perception of ineffectiveness, or if other factors(s), including factor-interaction, are exerting substantial influence.

- Respondent years in the workforce had a significant impact on how important the following skills were considered to be: Prioritization/focus, written communication, and time management. Further study is needed to determine if there is an interaction effect with other respondent factors (such as the industry-type factor or the education-level factor) that contributes to this significant impact.
- Respondent gender had a significant impact on how important the following skills were considered to be: Active listening, critical/analytical thinking, execution, oral communication, prioritization/focus, teamwork/collaboration, written communication, and time management. Further study is needed to compare the relative importance attributed to each of these skills to see if such differences reflect culturally reinforced gender roles, or indicate a tendency for different strategic approaches of males and females, or even suggest the underlying effect of some other factor.
- Respondent job type only had a significant impact on how important the execution skill was considered to be. Executives placed a greater emphasis on this skill. A qualitative study is recommended to help illustrate this skill and to determine what types of executive experiences, if any, led them to place a greater emphasis on this skill than did other respondents.
- Respondent level of education did not have a significant impact on how important any of the skills were perceived to be. Since nearly all respondents have had at

least four years experience in the workforce, this result may suggest a convergence of workforce views driven more by experience than education level. If true, this connection would demonstrate the potential value and impact of experiential learning. However, further study is necessary to investigate this possible connection.

### **Conclusion**

Workforce skills considered to be critical in the Chattanooga region have been identified. The skills identified as urgently critical provided an illustration of the three causal factors of social cognitive theory and, thus, speaks to the theory's universal application. The fact that this particular list of skills touched on all three causal factors affecting learning also suggests that development of these skills can provide a comprehensive platform for developing other high-impact workforce skills.

One of the most notable aspects of this study is that selection of the servant-leader theory of leadership was an organic process driven by the underlying values reflected in the CRS responses; taking the initiative and helping others. Such values are cause for much optimism as college-business partnerships are built (or strengthened) to develop workforce skills.

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APPENDIX A

APPROVAL LETTER FROM INSTITUTIONAL REVIEW BOARD

## Appendix A

### Approval Letter from Institutional Review Board

#### MEMORANDUM

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TO: John Doris **IRB # 11-077**  
Dr. James Tucker

FROM: Lindsay Pardue, Director of Research Integrity  
Dr. Bart Weathington, IRB Committee Chair

DATE: May 13, 2011

SUBJECT: IRB # 11 – 077: Corporate Training Needs and Training Methods in the  
Chattanooga Region

The Institutional Review Board has reviewed and approved your application and assigned you the IRB number listed above. You must include the following approval statement on research materials seen by participants and used in research reports:

***The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project # 11-077.***

Please remember that you must complete a Certification for Changes, Annual Review, or Project Termination/Completion Form when the project is completed or provide an annual report if the project takes over one year to complete. The IRB Committee will make every effort to remind you prior to your anniversary date; however, it is your responsibility to ensure that this additional step is satisfied.

Please remember to contact the IRB Committee immediately and submit a new project proposal for review if significant changes occur in your research design or in any instruments used in conducting the study. You should also contact the IRB Committee immediately if you encounter any adverse effects during your project that pose a risk to your subjects.

For any additional information, please consult our web page <http://www.utc.edu/irb> or email [instrb@utc.edu](mailto:instrb@utc.edu)

Best wishes for a successful research project.

APPENDIX B

WORKFORCE SKILLS SURVEY INSTRUMENT FOR CHATTANOOGA REGION  
SURVEY (WORKFORCESKILLS053111)

## Appendix B

### Workforce Skills Survey Instrument for Chattanooga Region Survey (WorkForceSkills053111)

Dear Survey Respondent: If you have any questions concerning the research study, please call me at [423-894-3866] or e-mail me at [dorris\\_j@bellsouth.net](mailto:dorris_j@bellsouth.net). This research has been approved by the UTC Institutional Review Board (IRB). If you have any questions concerning the UTC IRB policies or procedures or your rights as a human subject, please contact Dr. Bart Weathington, IRB Committee Chair, at (423) 425-4289 or email [HYPERLINK](mailto:instrb@utc.edu) <mailto:instrb@utc.edu>. Completion/Return of the questionnaire will be considered your consent to participate. Thank you. Sincerely, John P. Dorris UTC doctoral student (Ed.D. Learning and Leadership) 7130 Beacon Lane Chattanooga, TN 37421

**Survey Purpose and Data Usage/Confidentiality** As part of my doctoral research (at UTC), I am conducting a survey of business stakeholders in the Chattanooga region to gain a better understanding of the training needs of business organizations as perceived by business leaders and other business stakeholders. The information in this research study will be held confidential by me. Access to survey results may be given to faculty advisor, Dr. James Tucker, as necessary to complete the project. I will conduct the research study as part of a course offered by the College of Health, Education, and Professional Studies at the University of Tennessee at Chattanooga. I am requesting your participation, which will involve answering a survey (see below) that is expected to take no more than fifteen minutes to complete. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty of any kind. The results of the research study may be published, but your name will not be used. Your participation is very much appreciated. John P. Dorris

1. Date survey completed?

• \_\_\_\_\_

2. Your Name:

3. Organization:

4. How many years have you been in the workforce?

5. Gender:

1. Male
2. Female

6. With which type of organization are you affiliated?

1. Aerospace
2. Consumer Business
3. Distribution
4. Education
5. Financial Services
6. Government
7. Healthcare
8. Insurance
9. Life Sciences
10. Manufacturing
11. Military
12. Pharmaceutical
13. Professional Services
14. Real Estate
15. Retail
16. Technology
17. Telecommunications
18. Transportation
19. Other \_\_\_\_\_

7. Number of employees in organization?

1. 1-5
2. 6-20
3. 21-100
4. 101-500
5. 501-1000
6. 1001+

8. In which county/state is your organization located (if multiple locations then list county/state in which you work)?

1. Bradley / TN
2. Hamilton / TN
3. Marion / TN
4. Polk / TN



- 5. Sequatchie / TN
- 6. Catoosa / GA
- 7. Dade / GA
- 8. Walker / GA
- 9. Other \_\_\_\_\_

9. Your current position within the organization?

- 1. Executive Management
- 2. Middle Management
- 3. Front-line Management
- 4. Technical /Skill position
- 5. Other \_\_\_\_\_

10. Your highest degree earned?

- 1. High School Diploma
- 2. Associate's Degree
- 3. Bachelor's Degree
- 4. Master's Degree
- 5. Doctorate Degree
- 6. Other \_\_\_\_\_

11. Rate the importance of each of the following workforce skills, considering the impact each skill has on your organization's efforts to achieve performance excellence.

	1 (Insignificant)	2 (Minor Importance)	3 (Moderate Importance)	4 (Major Importance)	5 (Critical)
Active Listening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer Orientation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Critical/Analytical Thinking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oral Communications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written Communications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teamwork/Collaboration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prioritization/Focus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Decision Making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leadership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Execution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Of the terms below used to describe workforce skills, select any that you think need to be more clearly defined.

1. Active Listening
2. Customer Orientation
3. Critical/Analytical Thinking
4. Oral Communications
5. Time Management
6. Written Communications
7. Teamwork/Collaboration
8. Prioritization/Focus
9. Decision Making
10. Leadership
11. Execution
12. Data Analysis
13. Change Management

13. Considering workforce skills of your organizations existing employees (employed at least one year), rate their current skill level for each of the following:

	1 (No Competence)	2 (Minor Competence)	3 (Moderate Competence)	4 (High Competence)	5 (Expert Level)
Active Listening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer Orientation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Critical/Analytical Thinking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oral Communications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written Communications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teamwork/Collaboration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prioritization/Focus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Decision Making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leadership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Execution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. Describe the biggest negative effect inadequate workforce skills have (or could have) on your organization?

15. What level of responsibility should colleges have to help students develop the following workforce skills?

	1 (No responsibility)	2 (Minor responsibility)	3 (Moderate responsibility)	4 (Major responsibility)	5 (Primary responsibility)
Active Listening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer Orientation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Critical/Analytical Thinking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oral Communications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written Communications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teamwork/Collaboration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prioritization/Focus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Decision Making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leadership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Execution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. How competent are recently (past 12 months) hired college graduates in each of the following workforce skills?

	1 (No Competence)	2 (Minor Competence)	3 (Moderate Competence)	4 (High Competence)	5 (Expert Level)
Active Listening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer Orientation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Critical/Analytical Thinking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oral Communications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written Communications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teamwork/Collaboration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prioritization/Focus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Decision Making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leadership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Execution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. If colleges were to take the following actions, how effective would each be in helping your organization develop/improve workforce skills?

	1 (Ineffective)	2 (Minimally Effective)	3 (Moderately Effective)	4 (Very Effective)	5 (Most Effective)
Gather more input from community/business organizations regarding the skills needed by graduates and course topics of interest.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide more online courses.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Link employees to service learning or community project opportunities to apply skills learned.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expand and promote internship programs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Offer targeted seminars to develop a specific skill.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collaborate with other organizations to encourage their employees to return to college to complete an unfinished degree.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Help your organization develop a mentoring program.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Help your organization assess skills gaps and training needs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide more flexibility in time and location that courses are offered.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. How can organizations like yours most effectively help local colleges develop/improve workforce skills in the future workforce? (Check at least one)

1. Offer internships to current students.
2. Offer input regarding curriculum development.
3. Provide guest speakers to speak to classes.
4. Work jointly with a course instructor and students on a project.
5. Ask recently hired employees, who are college graduates, to speak to classes on the skill-set needed in the workplace.
6. Ask employees to volunteer to help with a tutoring program.
7. Suggest real-world scenarios/applications related to the course material
8. Other \_\_\_\_\_

19. Which of the following training methods are used by your organization?

	0 (Not Used At All)	1 (Used: Ineffective)	2 (Used: Minimally Effective)	3 (Used: Moderately Effective)	4 (Used: Very Effective)	5 (Used: Most Effective)
Short seminar/lecture (taught by internal staff)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short seminar/lecture (taught by consultant or college instructor)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multi-day seminar (taught by internal staff)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multi-day seminar (taught by consultant or college instructor)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reimbursing employees for an approved college course	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
On-the-job training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internship program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mentoring program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online training course	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Self-paced, informal individual study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work-related group project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Subject matter expert/consultant brought in to provide extended training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Webinars/podcasts/social media	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. Which workforce skill have you found to be most helpful in your professional career?

1. Active Listening
2. Customer Orientation
3. Critical/Analytical Thinking
4. Oral Communications
5. Time Management
6. Written Communications
7. Teamwork/Collaboration
8. Prioritization/Focus
9. Decision Making
10. Leadership
11. Execution
12. Data Analysis
13. Change Management
14. Other \_\_\_\_\_

21. How did you learn the workforce skill chosen in your response to Question 20?

## VITA

John Dorris was born in Chattanooga, Tennessee, to the parents of Jim and Charlotte Dorris. He is the youngest of seven children. Growing up in Chattanooga, he attended Our Lady of Perpetual Help Elementary School and Notre Dame High School. He then attended the University of Tennessee at Knoxville, where his major was statistics. In 1985, after receiving his bachelors degree in Business Administration from U.T.-Knoxville, he moved to Pennsylvania to attend Penn State University. It was at Penn State where he taught his first college course, an experience he thoroughly enjoyed. After completing a masters degree in statistics and a masters degree in Business Administration at Penn State, John moved back to Chattanooga to work at Esstee Manufacturing Company, where he became Vice President of Operations and Chief Financial Officer. While working at Esstee, he began teaching courses at local colleges and working on management consulting projects. In 2004, he joined the Chattanooga Regional Homeless Coalition as Executive Director, a position that led to him work for the City of Chattanooga as a consultant on homelessness issues. Currently, John continues to work as an advocate on homelessness issues, while providing management consulting services and teaching as a member of adjunct faculty at Chattanooga State Community College and the University of Tennessee at Chattanooga.