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A Study Of An Innovative Business School Curriculum

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A STUDY OF AN INNOVATIVE BUSINESS SCHOOL CURRICULUM

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ABSTRACT

A concern of business education in colleges and universities for many years has been the preparation of young men and women for the professional business world. Business curricula have adequately addressed the technical aspects of business preparation but have fallen short of the development of 21st century skills such as teamwork, communication, technical literacies, achieving high productivity, higher-order thinking, creativity, and risk taking. Innovative Curriculum College (ICC), the invented name of a Midwestern college, has introduced and is implementing an innovative curriculum that features the development of 21st century skills within the confines of core and upper-level academic classes. This study sought to determine if the perception of competence of two skills, teamwork and communication, increased for students in the first semester of their freshman year. Additionally, the study sought to determine if there were any differences between the changes in freshmen's perceptions of competence in teamwork or communication during the first-year curriculum at ICC compared to those in More Traditional Curriculum College (MTCC). Statistical analysis revealed that growth was noted in both schools and the results of the freshman experience did not reveal a statistically significant change in one institution as compared to the other.

DEDICATION

> I truly believe that everything that we do and everyone that we meet is put in our path for a purpose. There are no accidents; we're all teachers—if we're willing to pay attention to the lessons we learn, trust our positive instincts and not be afraid to take risks or wait for some miracle to come knocking at our door.
>
> -Marla Gibbs, BrainyQuote

It is with profound appreciation that I dedicate this work to the memory of my mother-in-law, Marilyn Modesitt, whose courage, kindness, and indelible spirit was an inspiration and comfort throughout my Ph.D. journey. Marilyn was aware of the challenges, joys, and frustrations that I faced and became my encourager always to move in a forward direction with confidence and an appreciation for each step taken. She was always interested in my progress, and even though she may not have understood the nature of my research, she was proud of my academic endeavors. Our conversations were much the same over the recent years as she never ceased to express a joy in my pursuit. I never tired of sharing this journey with her. It is with a humbled and sincere appreciation of Marilyn's kindred spirit that I take this time to say, "Thank you, Marilyn; and, oh yes, the butler did it!"

This work is also dedicated to all of those who toil and strive for another accomplishment in life; to climb one more step higher, to experience one more great exaltation no matter the circumstances of life. Our journey on this earth is an ongoing and an ever-changing set of amazements. To those who appreciate the wonder of life and its immeasurable opportunities, I

acknowledge and dedicate this work to you. Accomplishments can be made with a confidence in one's abilities and the usefulness of the resources available and at hand. To those brethren I say, *"Don't stop believing*."

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Finally, to my family I say thank you for your encouragement, support, and appreciation of this project. To my wife, Lisa, a special thank you for appreciating the enormity of this task and was always willing to listen and share in the joys of the fruition of my efforts. My children Sarah, Adam, and Micah were of immeasurable support especially when it seemed that “Dad just

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CHAPTER 1

INTRODUCTION

Study Rationale and Foundation

For many years a complaint among the business community from across the country has been that the product (graduates) of business schools (B Schools) is disappointing and is inherently flawed (Bennis & O'Toole, 2005). The statement itself is ironic coming from a discipline that appreciates efficiency and quality. The corporate and entrepreneurial business community thrives on achieving outstanding work in a competitive arena. So, what is going on in the B-School? Should not the producer (schools) of this product (graduates) be concerned with quality and customer satisfaction? The business school core curriculum has changed very little over the past 30 years and has responded only modestly to the major shifts in the business community (Dudley, Dudley, Clark, & Payne, 1995).

Business school education was a late bloomer in academia. Its entrée into the collegiate environment is traced back to the 1930s (Cheit, 1985). In its early days, it was considered little more than vocational training featuring bookkeeping, secretarial studies, and office management. The main critics worried that universities would become little more than a trade school for commerce. The general feeling was that business education had to grow and mature within the standards and practice of academia. Business study, as a discipline, could only come into its own, in the view of academia, when it positioned itself as a science complete with research and

analysis. For 30 years, leading into the 1960s, business studies did just that, growing into acceptance in the academic world (Cheit, 1985).

Critics emerged during the 1960s (Bennis & O'Toole, 2005). The challenges and criticisms came from outside of academia. Businesses and practicing professionals asked for a change in the business school pedagogy from the *science* of business to the *art* of business (Bennis & O'Toole, 2005). As a result, two models began to appear in the halls of higher education. One model, the scientific approach, is frequently described as the academic model. It applies the academic disciplines of inquiry and analytic techniques to the management of business. It looks to rigorous intellectual work as the driver of business competence.

The 1960s introduced a different philosophy to business education. This was known as the professional model, which shifted the emphasis from the laboratory (classroom) to the field (applied business environment) where it featured business education as embracing complex, unstructured problems (Cheit, 1985). The inherent problem in the professional model was that it struggled to gain acceptance in the halls of higher education. It was not considered to be research based with a high intellectual focus. With few commonalities between the two approaches, a chasm in educational philosophy developed (Pfeffer & Fong, 2002). Those divides remain in today's business/education world and perpetuate the problem that continues through today.

Four decades ago, White (1970) suggested that the spirit of entrepreneurship would be the driver of businesses in the future. Not to be confused with only venture creation, entrepreneurship represented that dynamic vision of creating and sustaining a spirit and capability of productive activity. Spirit and capability represented both a command of the sub-

disciplines of business and the 21st century skills, which included such abilities as communication, teamwork and cognitive logic (Burkhardt et al., 2003).

What should be the product of B Schools in the future? White (1970) claimed that business schools should look to the future and design those schools and business programs to be multidimensional, including both the academic elements of the discipline and the 21st century skills. In this context, 21st century skills, also called support skills, represent those abilities that could add value to the academics of business study. White noted that business graduates in the future would be more entrepreneurial than systematic. They would come into business with research-developed capabilities that would be the conduit between the academic and the practical arenas of business. He also emphasized the critical nature of communication in business to reach and attain basic human cooperation in productive activity. Moreover, he asserted that business graduates were entering a dynamic arena in which change was inevitable and where leaders must meet the challenges of the workplace.

Dudley et al. (1995) stated that business schools must use a consumer-driven approach to meet the needs of the modern business marketplace. Business school educators have been slow to recognize the consumer influence in developing curriculum for business education. Dudley et al. stated,

> If business programs are to remain viable, curriculum revisions must consider both the business and educational environments. It is clearly in the faculty member's interest to ensure that their "product" is what the market wants. In today's business environment, that primarily means seeing that students are prepared to make an immediate contribution and to do so in an atmosphere of diversity and change. (p. 5)

Bennis and O'Toole (2005) claimed that the problem with business schools was not a curriculum issue. They felt that business schools had lost their way by not emphasizing what was important; that is, the practical and relevant. They noted,

> The best classroom experiences are those in which professors with broad perspectives and diverse skills analyze cases that have seemingly straightforward technical challenges and then gradually peel away the layers to reveal hidden strategic, economic, competitive, human, and political complexities—all of which must be plumbed to reach truly effective business decisions. (p. 6)

Statement of the Problem

The problem is that businesses feel that students are graduating without the development of 21st century skills needed in the dynamic work environment. According to Dudley et al. (1995), 21st century skills such as communication and interpersonal relationships were critical skills for new employees as they worked in an arena of stakeholders of diverse backgrounds. These authors suggested businesses have discovered that new graduates with a proficiency in one or more 21st century skills such as communication can be trained in the business principles that they lack. Bennis and O'Toole (2005) noted that the B-School curriculum must include multidisciplinary, practical issues. "The problem is not that business schools have embraced scientific rigor but they have forsaken other forms of knowledge" (Bennis & O'Toole, 2005, p. 10). They added that, too often, business schools measured their effectiveness in terms of the degree and the amount of research rather than the degree and the amount of preparation for the practical business arena. Bennis and O'Toole continued with,

> The actual cause of today's crisis in management education is far broader in scope and can be traced to a dramatic shift in the culture of business schools. During the past

> several decades, many leading B schools have quietly adopted an inappropriate-and ultimately self-defeating-model of academic excellence. Instead of measuring themselves in terms of competence of their graduates, or by how well their faculties understand important drivers of business performance, they measure themselves almost solely by the rigor of their scientific research. They have adopted a model of science that uses abstract financial and economic analysis, statistical multi regression, and laboratory psychology. Some of the research produced is excellent, but because so little of it is grounded in actual business practices, the focus of graduate business education has become increasingly circumscribed and less and less relevant to practitioners. (p. 1)

The main flaw as seen by Bennis and O'Toole (1995) was in the concept of scientific model. The Bennis and O'Toole scientific model stated that business is flawed because it is looked at as an academic discipline, like the sciences or humanities. "In fact, business is a profession, akin to medicine and law, and business schools are professional schools--or should be. Like other professions, business calls upon the work of many academic disciplines" (Bennie & O'Toole, 2005, p. 1). Bennis and O'Toole felt that the distinction between an academic discipline and a profession is an extremely important difference. They sensed that reforms in curriculum will not be effective unless and until the business education model is centered upon the ideals of a profession. Bennis and O'Toole continued by saying until the business school curricula moved to a practical and professional focus, it would not serve the business community in a way that it hopes and expects.

Behrman and Levin (1984) felt that the business schools had a responsibility to respond to the needs of the business community. They looked at the state of business education in colleges and universities and cited seven goals, which were imperatives for a viable business

education curriculum. In order to produce the product (college business graduates) that is needed in the marketplace, schools must address the following, to ensure that

- Students should understand their place in the modern business environment. They should understand the discipline before they can appropriately lead others.
- Student should be versed in cultural differences, in order to have a viable place in the global economy. "Cultural imperialism" no longer has a place in business attitudes.
- Students should have an appreciation for history and for those who defined business disciplines as we know them today. The understanding of (intra-correctness) among disciplines is important to deal in the modern complexities of the business world.
- Student should be first in creativity and critical thinking. Students should be able to address complex situations in a logical order. In so doing, they become comfortable with an environment that is inherent with risk and uncertainty.
- Students should be comfortable with communication and negotiation skills. These are among the important and necessary skills in the modern business world today. In so doing, the modern business person will reduce conflict and find avenues for satisfactory resolution of differing opinions.
- Students' coursework in business schools today should include an emphasis on the growth and development of subordinates and peer managers.
- Students should learn, through their business school experience, to view the business work environment in humanistic terms rather than an impersonal corporate model. (Behrman & Levin, 1984)

In this context, Behrman, and Levin (1984) offered a view of curriculum review to accomplish the above-stated goals. In order to meet the goals, they offered a three-legged stool

to support the goals they felt were necessary. The legs of the stool included (a) an emphasis in the value of lifetime learning, (b) an interdisciplinary and holistic approach to problems, and (c) an approach that features the uncertainties of the environment and how modern business persons will achieve objectives. Behrman and Levin continued by stating that the new business curriculum must include the greater development of communication skills, both written and oral. Additionally, all communication media should be addressed in a more meaningful way in higher education. This includes report preparation, group leading and teamwork development, oral response under pressure, and extemporaneous speaking. The new business curriculum should emphasize creativity and move away from narrow models that formulate a desired course of action (Behrman & Levin, 1984). The only way to prepare students for the rapidly changing world is to recognize and embrace cultural differences through meaningful and effective communication.

In regard to the nature of business school curricula, Behrman and Levin (1984) felt that the schools should direct their curricula away from methodology focused on content and toward a methodology based upon experience. Course materials should be integrated across disciplines to give students a broad understanding of management so that they can later communicate with managers. "Teaching areas should be coordinated so that professors can remove their disciplinary blinders which limit them technologically, internationally, ethnically, culturally, and politically-and begin to think in policy and strategy terms" (Behrman & Levin, 1984, p. 144).

The problem addressed by this study is that businesses are disappointed in the graduates coming from academic institutions (Behrman & Levin, 1984). Graduates do not possess the 21st century skills needed in a dynamic professional environment. Admittedly, theory and technical skills of the various business disciplines are adequate and are appreciated in the business

community. Unfortunately, another dimension that is ineffectively addressed by colleges and universities is referred to by the term 21st century skills.

A 21st century skill is rarely taught as a focused content area (Burkhardt et al., 2003). It is something that must be nurtured and developed. The 21st century skills include, but are not limited to, problem solving abilities, communication skills (written and oral), one's ability to work in a team, analytical abilities, interpersonal skills, ethical leadership, and having an integrative understanding of business (enGauge, 2003). Podolny (2009) shared his thoughts on the value of liberal educational experiences by stating that if the breadth of one's academic study included history, literature, philosophy, and religion, students would expand their 21st century skills. He asserted that the emphasis on the 21st century skills would encourage the broad-sided and society-serving decisions that would result in a value-added society which included profitable businesses and a served community.

Hynes and Stretcher (2008) discussed the carry-forward effect (more formally known as transfer of learning) of report writing strategies and oral presentation. They conducted a study at Sam Houston State University to investigate whether students carried forward knowledge, skills, and strategies learned in one course and applied those skills in another course. The study featured both writing and oral presentations. They found that the skills did, in fact, carry forward but with varying success. Due to the small sample size, further research is required to confirm the hypothesis.

Graduates entering the workforce are abounding with theory and content. Daly (1992) contended that the problem becomes one of applying the knowledge and the skills that then translate into the professional readiness of graduates in the workplace. Bennis and O'Toole (2005) concurred, noting that some employers felt that business graduates were not quite

proficient with their professional preparation; they proposed that the more broadly educated are more likely to have a better foundation for beginning their career.

Dudley et al. (1995) noted that a disconnect existed between the product of the B-School and the expectations of the business environment. That disconnect was noted by a change in the business workplace. The authors stated,

> A redefinition of how work gets done is also taking place. Firms are breaking down functional fiefdoms–marketing, engineering, manufacturing, and so forth–and redeploying workers into multidisciplinary teams. These positions require interpersonal skills, the capacity to interact effectively with coworkers from a variety of educational disciplines, and the ability to integrate different disciplines. These skills have not been emphasized in the nearly defined "majors" offered by business schools. (Dudley et al., 1995, p. 306)

Daly (1992) stated that many companies went to great lengths to orient graduates to the realities of the business arena. He noted these orientation programs had very little to do with business theory and almost exclusively focused upon the 21st century skills of teamwork and communication. The orientation phase could be as short as a few weeks or extend into many months. To the businessperson, this translates into an expensive startup that limits a person's efficiency on the job.

An example of an expanded academic background appreciated in the professional practice arena is seen in the certification of accountants. Bierstaker, Howe, and Seol (2005) noted that in 2000, the American Association of Certified Public Accountants (AICPA) added an additional requirement to certification candidates before taking the professional exam in accountancy. The AICPA required that an applicant have 150 college academic hours before

taking the certifying exam. This was designed exclusively and expressly to create a more well-rounded individual to serve in the professional community. The AICPA felt that it was in the best interest of certified accountants to have a greater breadth of knowledge than simply the technical aspects of accounting.

The extra hours of college credit were not designated in any particular area. Boone and Coe (2002) found that those who wished to take the certifying exam were encouraged to take the extra college credit hours in areas other than quantitative courses. This new ruling was well received by businesses that typically employed CPAs. It seemed to address, at least in part, the issue of the deficient 21st century skills so appreciated in professional accountancy.

The research and data on 21st century skill development is very modest, and most business curricula see the 21st century skills as a developmental factor, not a teachable course or set of concepts. Starkey and Tempest (2008) suggested that students must learn to work together as they develop and nurture attitudes of inquiry and curiosity. In addition, he proposed that the new approach to business curricula design cultivates a more open way of accomplishing tasks through human relationships.

Doria, Rozanski, and Cohen (2003) claimed that collaborative thinking is a highly desired skill for companies in today's business arena. According to Doria and his colleagues, companies seek those individuals who are adept in oral and written communication. Further, they noted that B Schools tended to train people in theory and concept, and they did not emphasize the value of communication excellence.

A curriculum, however, does exist, which features 21st century skill development integrated within the business core courses. This is a very unique business program that is not based upon any other existing curricula. This curriculum was presented to the faculty of

Innovative Curriculum College (ICC)[1] for endorsement in 2012. Its intent and purpose was to address the issues expressed by employers to develop 21st century skills along with the academic subject areas of a school of business.

The assistant academic dean of the Innovative Curriculum College submitted the rationale of this curriculum to the faculty for approval on February 8, 2012. The school of business at ICC adopted this strategy to focus on professional development instead of technical expertise. The unique feature of this program was that it emphasized developing skills that employers value rather than subjecting the students to rote memory of facts, formulas, and techniques. Learning in this model was experiential, integrative, and collaborative. In the end, students are provided with opportunities to gain experience and develop skills necessary for success.

Purpose of the Study

The purpose of this study was to observe students' perceptions of communication and teamwork following the first semester of business studies at ICC. This study compared the perceptions of ICC students with More Traditional Curriculum College[2] (MTCC) students.

The ICC curriculum in the school of business was an innovative and progressive business program that integrated the business discipline learning within several academic classes supported by a backdrop of 21st century skill development. It was designed with the intent that students would grow into their business academic expertise while discovering and developing

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[1] The name Innovation Curriculum College is fictitious; the institution is not. It is a Midwestern university.

[2] The name More Traditional Curriculum College is fictitious; the institution is not. It is a Midwestern university.

their 21st century skills. The expectation is that such a program will produce graduates who use communication and teamwork as essential ingredients of their skill development. Furthermore, those who designed the curriculum and who now implement it hope that the consequential result will be that businesses will find a more complete product of the B-School ready to contribute, and that these new workers will require a lower startup cost than previously experienced.

Research Questions

The two overarching questions in this research study are (a) To what extent do students in the ICC School of Business change their perception of competence in teamwork and communication? and (b) To what extent do students in the MTCC change their perception of competence in teamwork and communication? Sub-questions to the above are

1. At the ICC, what are students' perceptions of their competence in teamwork?
2. At the ICC, what are students' perceptions of their competence in communication?
3. At the MTCC, what are students' perceptions of their competence in teamwork?
4. At the MTCC, what are students' perceptions of their competence in communication?
5. After one semester, how do the changes in perception of teamwork competence at ICC compare to those at MTCC?
6. After one semester, how do the changes in perception of communication competence at ICC compare to those at MTCC?

Delimitations

Delimiters are factors and characteristics of sample selection that are within the control of the researcher. They limit the scope and defined boundaries of a given research project.

1. The study sample included first-year business students at ICC and MTCC. This was the population featured in the ICC model and the most appropriate population group.

2. The study was conducted in the Fall 2015 semester at ICC and MTCC. This included all test subjects during the first semester of business study at ICC and MTCC.
3. The survey instrument used is the Teamwork Competency Test (TWCT). The TWCT is among several instruments that address teamwork and communication. This test was chosen due to my opinion of its applicability to teamwork and communication.
4. This study featured the 21st century skills of communication and teamwork. I acknowledge that there were many 21st century skills. Communication and teamwork were two of many. The conclusions reached about communication and teamwork may not be generalized to all 21st century skills.
5. ICC and MTCC are private, faith-based institutions. The institutions involved in the study were similar in characteristics and featured a common demographic. It was believed that this gave a strong basis to compare and contrast, yet influenced the generalization of results, as one might contend that the results might not be as generalizable to schools serving a different student.

Limitations

Many times researchers face factors beyond their control. These factors are referred to as limitations (M. Simon, 2011). The limitations exist in virtually all that one does. The study included the following limitations:

1. Only students who voluntarily choose to participate were included in the study. There could have been a factor that set apart a group or groups of students. Should this happen, the results and conclusions may not have been applicable to all college students. Such a factor was not noted in this group.

2. The sample used for this study was a sample of convenience and not a random sample. The schools involved were available and willing to participate. This did not imply that all students were represented and limited the generalizability of the study.
3. This survey used a quantitative methodology. No qualitative data were used. Students did not have an opportunity to explain and expand upon their perceptions and feelings. This may have had an effect on the completeness of the responses.
4. The statistical techniques such as ANOVA, *t* tests, repeated measures, and effect size were appropriate for this analysis. I applied many analytical techniques available in statistical programs such as SPSS. There may have been statistical routines not included in the popular statistical packages that would yield different conclusions.
5. Timing of the delivery of the instrument required a pre-semester and post-semester test to determine changes in perceptions. The time period was reasonably short (15 weeks) and some subjects may have required a longer time for assimilation of the skills being tested. Thus, the possibility was that these skills may not have been present themselves or been recognized by the participants during the time period studied.
6. Some students may have had advanced placement in high school which addressed some of the 21st century skills. As human subjects are unique within themselves, high school experiences in preparation, maturity level, and the level of academic enthusiasm may have caused differences in the subjects studied.
7. Some students were still getting accustomed to college–away from family and friends in a new environment. All subjects in the study were first-semester freshman. They were experiencing a life change as they became acclimated to the college

environment. In consideration of such, social and academic experiences may have influenced the data collected.

8. Some students may have had a natural strength in the 21st century skills before entering college. They did not all have the same level of skill mastery.
9. Some students may have developed the 21st century skills in other classes or through other experiences in college. There may have been programs or activities that included communications and teamwork as a part of the on-going collegiate activities. This could include sports, clubs and organizations, off-campus work, on campus work, and activities of personal interests.

Special Definitions

21st century skills are those sets of skills that include, but are not necessarily limited to, teamwork and communication (Silva, 2008).

The *academic model of business curriculum* is the thought that business studies are akin to the sciences (Cheit, 1985).

Consumer-driven approach to curriculum development represents the consideration of the dynamics of the marketplace in curriculum decisions (Dudley et al., 1995).

Functional aspect of business is a curriculum that contains such courses as manufacturing, informatics, logistics, and quantitative analysis (Cheit, 1985).

Holistic view is the appreciation of a heightened sense of interconnectedness among elements of a business school curriculum (Behrman & Levin, 1984).

Innovative is the character of an action which introduces an innovation. This is typically seen as new ideas about how to approach an activity or event. Additionally, it is the introduction or use of new ideas and sharing new ideas about how to do something. Innovative. (n.d.). In

Merriam Webster's on line dictionary. Retrieved from http://www.merriam-webster.com/dictionary/innovative

Methodolatry represents the limitations on the view of the external and internal environments scaled by what can be seen and measured (Bennis & O'Toole, 2005).

Numbers driven curricula is the condition that existed in the early 1960s in which business schools were orientated to a quantitative approach to business education (Behrman & Levin, 1984).

The *professional model* is the practice of acknowledging excellence through teaching and thoughtful writing (Bennis & O'Toole, 2005).

The *professional model of business curriculum* is the focus of the curriculum as seen in the functional fields of business practice (Cheit, 1985).

The *scientific model of business curriculum* is the assumption that the business school curriculum model is similar to hard-science curricula in areas such as chemistry and life sciences (Bennis & O'Toole, 2005).

The *vocational school* is the characterization of business school curricula designed for an occupational outcome (Behrman & Levin, 1984).

The Conceptual Model

Figure 1 presents the relationships that exist between the research questions, statement of the problem, quasi-experimental design, and the conclusion. This represents the concept of the study and the methodology used to come to its conclusion. The model is designed to provide a visual representation of the study.

The two overarching research questions are (a) To what extent do students in the ICC school of business change their perception of competence in teamwork and communication? and

(b) To what extent do students in the MTCC change their perception of competence in teamwork and communication? This study was based upon the fact that these 21st century skills are important to companies hiring graduates of business schools in today's environment. The curriculum design of the ICC school of business is unique as it addresses 21st century skills.

The flow of the model continues from the problem statement and research section to the academic research box. This box represents the discovery phase of this exercise. I provide documented research and commentary supporting the notion that business school graduates are deficient in the 21st century skills. Three positive outcomes are achieved by addressing this deficiency. The research focused upon the fact that

1. Hiring companies are in fact demanding these skills.
2. Young men and women, as college graduates, will come into the job market with a competitive edge if their skills are addressed.
3. Business schools must be more relevant to the 21st century.

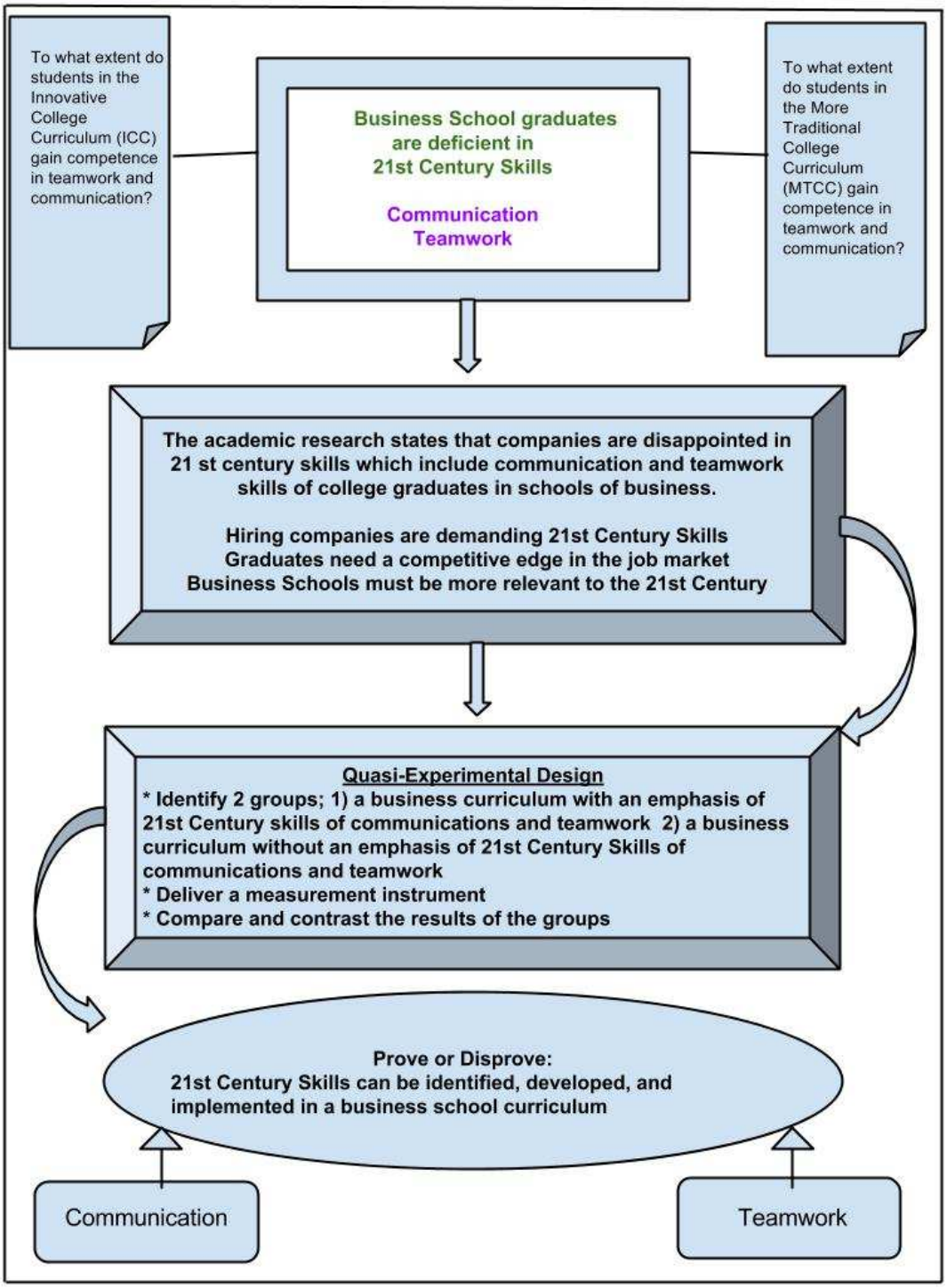

Figure 1. The conceptual model – Activity flow from research questions to conclusion.

It was the intent of this section of the study to emphasize the value added to those who receive the benefit of the ICC business school curriculum. Furthermore, the research shows that most business schools do not emphasize these skills. Most business schools do not acknowledge the need to address these skills. It is the traditional assumption that the students will pick up these skills in their intellectual and academic maturing processes. Very little attention is given to the fact that these skills are important in a business curriculum.

As the model continued, note the research quasi-experimental design. I tested the view that students can be awakened to the importance of these skills and carry those skills with them throughout their college careers and beyond. The ICC business school sought to address this very issue. The curriculum was specifically designed to address the 21st century skills of communication and teamwork. It was the intent of this study to determine if this curriculum is effective.

I designed and initiated a study of incoming freshmen students to a business curriculum. Two groups of students were studied: one group from ICC and another group at the MTCC in a Midwestern community. The students from ICC and MTCC were matched very closely in terms of their demographic backgrounds and academic pursuits. A pre- and post-semester measurement tool was delivered to both subject groups. It was the intent of the study to compare and contrast changes from beginning of the semester to the end of the semester.

The model showed a natural progression to the conclusion phase. This study proved that 21st century skills can be identified, developed, and implemented in a business school curriculum. If it were true that these skills can be directed and retained by the students, they (students) would be able to develop these skills to their intellectual and academic maturation process. If successful, ICC students would enter the workforce with a more developed set of

21st century skills than students from a curriculum that did not emphasize those skills. The final illustration of the model indicates the 21st century skills that are featured in this study.

Summary

Chapter 1 featured a discussion on the background of the problem and the need for a solution, in that the research demonstrated that businesses are disappointed with the product of the B-School. Causes for this condition have been identified and the consequences to the business community were featured. Chapter 2 presents a theoretical model and review of relevant literature identifying main concepts and the important variables. This chapter includes topics for the proposed study. Chapter 3 presents the methodology including a research design and a description of the sample, its characteristics, the data collection methodology, and the organization of the data. The analysis continues in Chapter 4 with the presentation and review of the data. The discussion includes descriptives, mixed design (split plot) ANOVA, and paired sample *t* tests. Chapter 5 provides a summary of the descriptive and inferential enquiry of this study. The discussion of findings continues with conclusions and implications of the data followed by a comment on future research.

CHAPTER 2

REVIEW OF LITERATURE

In June 1881, Joseph Wharton made a gift of $100,000 to the University of Pennsylvania with the proviso that the university establish a school of finance and commerce (Cheit, 1985). Wharton's gift has been recognized as the entrée of the discipline of business in modern academia. Prior to this time, post-secondary business programs were considered to be vocational in nature. Rousseau (2012) stated that Wharton Business School began with the intent of subscribing to the prescriptions of a knowledge-based profession. In so doing the Wharton school accepted the charge of developing ethical practitioners and leaders of social responsibility who were cultured in the vocational prescriptions of the business discipline. As an added charge, the Wharton school provided a background in the social sciences in order to prepare most appropriately the students for the conduct of the business world (Rousseau, 2012).

Cheit (1985) noted that in the late 1800s business education was confined to the modest arenas of normal schools, trade schools, and a few commercial colleges. The study of business was considered to be nothing more than a training school that featured lessons and readings in office organization, stenography and secretarial skills, and bookkeeping. Business studies were not considered to be worthy of traditional academic integrity and therefore not included in the collection of higher education programs of the sciences, arts, and humanities (Cheit, 1985).

The Wharton gift did not usher in the first conversation about business offerings in institutions of higher education. Thomas Jefferson promoted business as a course of study at the

University of Virginia in the early 1830s (Cheit, 1985). Jefferson felt that a school of commerce with other graduate level academic offerings had a rightful place in higher education. Jefferson's ideas and design for a business curriculum at the University of Virginia were discussed and then tabled for further review at a later date due to limited funding (Cheit, 1985). The thought of university-level instruction in the area of business evoked both controversy and criticism among many people in the academic community (Rousseau, 2012).

Business Education: The Early Years

Business education was not a natural fit in the early days of academia. Business was clearly thought of as a vocation, a path one chooses to establish an economic station (Cheit, 1985). Because of that economic and social philosophy the idea of business as a higher education discipline was not considered to be in the same academic strata as the studies of humanities, arts, writings, and philosophies of the day (Cheit, 1985).

Acceptance of Business as an Academic Discipline

It was the hope of Wharton that his gift would offer college students an education in the study of commerce and finance as seen through an exposure to the liberal arts (Cheit, 1985). However, the academic community did not embrace the study of business as a true academic discipline. The Wharton School and the University of Pennsylvania found vocal criticism concerning the thought and concept of business included as an academic discipline in the halls of higher education. Kirkland (1956) stated, "In the light of modern educational practice," the Wharton school was largely "a device to give students at the University of Pennsylvania, a major in history and social science" (p. 98).

Many faculty members were in abject opposition to the idea and concept of mixing business education with the arts and sciences. Whyte (1957) stated, "The first and most

important destructive influence at Pennsylvania of the atmosphere important for the nourishment of the humane arts is the Wharton school of finance and commerce" (p. 93). This unsupportive attitude of business education continued through the early 20th century.

Growth of Business in Higher Education

The study of business in higher education slowly gained acceptance within the academic community during the later stages of the 1800s and the early years of the 1900s. The period of 1915 to 1924 was the growth spurt of business as an academic study (Cheit, 1985). The demand for business programs and study in higher education was at an all-time high. By 1925, almost 200 American colleges and universities had a department or school of business. Many other institutions included the study of commerce and finance in their course offerings (Cheit, 1985).

During the late 1950s, the president of the University of California, Clark Kerr, shared with his colleagues his thoughts of business courses and programs on American college campuses. Kerr, a professor of business himself, felt that "business administration was busy searching for its soul" (Cheit, 1985, p. 45). Veblen (1968) wrote, "An institution of commerce is incompatible with the collective cultural purpose of the University. It belongs in the corporation of learning no more than a Department of Athletics" (p. 154). Bennis and O'Toole (2005) commented, "For the first half of the 20th century, B schools were more akin to trade schools; most professors were good old boys dispensing war stories, cracker-barrel, wisdom, and the occasional practical pointer" (p. 2).

The War Years and Beyond: 1940s to the 1970s

The World War II era ushered in an increase in enrollment of business schools. By the mid-1950s, business had become the most popular undergraduate major in colleges and universities (Cheit, 1985). A concern at that time prevailed that business schools were

dispensing with the humanities and were becoming one-dimensional. An editorial from the University of Pennsylvania student newspaper began, "The first and most important destructive influence at Pennsylvania of the atmosphere important for the nourishment of the humane arts is the Wharton School of Finance and Commerce" (Whyte, 1957, p. 97).

In the time following the World War II, degrees in business attracted many of the brightest and most talented college students. During the 1940s and 1950s, the incoming students sought the business degree as a more attractive option to more traditional courses of study (Kirp, 2003). It was during this time that comment and commentary revolved around two questions. Those questions were shared by Starkey, Hatchuel, and Tempest (2004),

> Is the business school primarily about career and salary enhancements, factors that dictate the position of the business school in the league tables of business performance? Or is the business school to be considered a social institution, a key player in the history of the evolution of a revolutionary new idea and ideal – the profession of management? (p. 1522)

These are the lingering and elusive questions that have attached themselves to the notion of business as a course of study in higher education. In a very real sense this began in the early days of the Wharton school and continues in discussion today.

Cheit (1985) noted that an interesting phenomenon was observed during the period spanning the 1950s to the 1970s. The early part of this time period saw a sharp rise in the number of students pursuing a business degree. Explanations for this phenomenon were many and varied. Most observers concluded that this newfound popularity in business was a continuation of the interest generated during the World War II years (Cheit, 1985). Large schools as well as small schools saw the opportunity to develop business as a major academic

course of study. University administrations found a keen interest in promoting the school of business. The business schools brought in students, those students became alumni, and the alumni donated money to the universities (Cheit, 1985).

It was during this period of time that a disconnect began to appear regarding business as an academic discipline and business as a professional practice. Active conversation ensued breaching the topics of business as an art versus business as a science, business as a philosophy versus business as a practice, and business as a social science versus business as an applied science (Behrman & Levin, 1984). Business schools in the 1950s and 1960s felt that the greater academic community would accept them as a true academic discipline only after a proven emphasis of research and publication (Bennis & O'Toole, 2005). The academic leaning to business education was driven by research and publication. Much of the attention during this time was given to scientific modeling of business theory and concept (Bennis & O'Toole, 2005).

Business Discipline in the 1980s

As the business curriculum became accepted in academia, it was being questioned and criticized in the professional arena. Businesses (those in the professional arena) began seeing an increase in quantitative theory and a lack of emphasis in human skills such as communication and teamwork (Behrman & Levin, 1984). Business was becoming scientific; quantitative theory was the point of emphasis in many schools of business. Even though it had its application within the practical approach to business many were questioning its viability and application within the pragmatic arena of business (Behrman & Levin, 1984).

Business education was still seeking academic approval. It was thought that the path to academic acceptance would be best navigated through scholarly research and publication. Business schools began to actively recruit professors with a rich background in research and

publication (Bennis & O'Toole, 2005). Those professors were encouraged to further the academic discipline through their research and publications. Over time, this interest in the academic validation of the discipline established a pattern of research and publication emphasis. The consequence to this academic validation was that business schools were drifting away from the practical implications of the curriculum (Bennis & O'Toole, 2005).

Over the last 25 years, colleges and universities have seen the business school as an element of organizational success (Starkey et al., 2004). It has become a major profit center, providing both a student population and alumni donations to the universities. In this regard business school growth remains a key element for the future success for institutions in higher education (Starkey et al., 2004). Business school development is sustained and is the fastest growing part of colleges and universities today. The Master's degree in business administration (MBA) is recognized throughout the world as a model or standard of business education (Mintzberg, 2004).

The Gordon-Howell Report and the Pierson Report

Two studies that appeared in 1959 leveled harsh criticism on the business school of the day. Those two research documents are known as the Gordon-Howell report and the Pierson report (Pfeffer & Fong, 2002). The reports were supported financially by the Ford Foundation and the Carnegie Council. Even though these reports were produced independently, they were remarkably similar in descriptions and conclusions of the state of business education in the late 1950s (Pfeffer & Fong, 2002).

Behrman and Levin (1984) found the reports reflected the notion that business schools were largely vocational and had little or no future focus. They were concerned with the discipline as it existed in the past and at the current moment. Institutions of higher education

with business programs showed very little planning and future focus (Behrman & Levin, 1984). Business education was lacking in the social sciences and mathematics with untrained and insufficient faculty to produce and manage the curriculum. Faculties were either adjunct, steeped with practical knowledge, or academicians whose first discipline was in areas other than business and commerce (Behrman & Levin, 1984). Only 40% of the faculties possessed earned doctorates, and of that group, 85%-90% were in economics and the social sciences. Very little attention was given to curriculum design, as business schools were more interested in producing a product than creating an accepted academic discipline (Behrman & Levin, 1984).

Pierson (1959) stated that business schools were achieving academic respectability by subscribing to social science in either an applied sense or theoretical sense. Business schools felt an obligation to turn to the ways of traditional academia. This meant that the business schools were encouraging, and in many cases requiring, faculty to engage in active research and publishing (Cheit, 1985).

The Academic Model

The post-1970 era marshaled in the science of business decision-making through quantitative and statistical analysis. This was considered the scientific approach to business education, and it gained prominence in the major colleges and universities (Bennis & O'Toole, 2005). The emphasis of quantitative and statistical analysis was seen as the path of least resistance to achieve acceptance in the academic community. This strategy did, in effect, accomplish that objective (Cheit, 1985). However, as business schools began to emphasize the ideology and theoretical aspect of business, it began to drift away from the hands-on and practical topics of business studies (Pfeffer & Fong, 2002).

With enthusiasm to expand, the schools of business at colleges and universities throughout the country subscribed to the traditional academic model, which emphasized research and publication. The professors who were hired to manage this growth spurt in business schools were of the traditional academic approach (Cheit, 1985). They were researchers and writers who embraced business in the true academic sense. Those schools and professors in the 1960s and 1970s were academics as opposed to practitioners and expanded business context through theories and research and began to gradually drift away from the practice of business (Cheit, 1985).

Pfeffer and Fong (2004) identified and addressed the two major issues that dominated the business school discussions. The issues were (a) Should a business school contribute to business knowledge foundation via the avenue of classical academic research? or (b) Should a business school contribute to business knowledge foundation via classroom teaching based upon experience and practice? The commitment to academia is often challenged based upon the conceived perception that businesses fail in critical thought and analysis. Additionally, businesses are criticized because of a lack of defined practice fields (Starkey et al., 2004).

Starkey et al. (2004) continued by noting that some feel that academic values are compromised due to the inherent failings of the business school. These failings manifest themselves in the demonstrated lack of critical thought in the disciplines of general business and management, and the fact that schools of business lack designated practice fields with professional credentialed admission to practice. Mintzberg (2004) agreed with Starkey et al.'s position by emphasizing the feeling that the teaching of the practice of business is subservient to the academic emphasis in most business schools.

Business School Curricula

Business school curricula were compelled to gradually change with the urgings of both businesses and academic institutions. Those changes came about in the early 1960s, when a greater emphasis on quantitative and management science topics surfaced in many business schools. From that time through the 1980s, students studied mathematical models and pursued the study of scientific management. It was during this time that schools of business emphasized technical solutions to problems through the case study approach.

The following decades produced a curriculum of case models to address the business challenges of the modern day. This methodology was heralded as a breakthrough in business education. However, at issue was the fact that the education models were poorly constructed, and the hypothetical situations wafted from the genuineness of the business community. The gap between realities of the society and the theories of the classroom continued to increase (Behrman & Levin, 1984).

Also, during this time, business schools were trying to find their acceptance in mainstream academia. The popular notion was that acceptance in the academic community would come through faculty research and publication. Over the course of time, faculty research narrowed the discipline. Research topics changed from the general view of business to more finely defined issues. Research frequently contained disclaimers for the practical applicability of its results due to narrowly defined hypotheses and small populations of observable research. This forced business schools and programs to be ill prepared for a well-rounded preparation of the students for the workforce (Behrman & Levin, 1984).

The popularity of business education in colleges and universities increased in the mid-1970s. Most institutions of higher education had a version of business education as a

concentration, minor, major, or graduate field of study. The marketplace responded with the growing acceptance of the business degree. Cheit (1985) commented, "The growing acceptance of the MBA by employers meant that men and women were, in effect, commissioned into managerial jobs by getting a degree from a business school " (p. 47).

The 1980s ushered in a new wave of criticism. Cheit (1985) identified 13 notes of criticism grouped into four headings. He asserted that (a) B Schools emphasize the wrong model, (b) B Schools ignore important work, (c) B Schools fail to meet society's needs, and (d) B Schools foster undesirable attitudes. The crux of this criticism rested in the attitudes of business education in the 1980s. Critics challenged the model, which regarded business education as a field of science, often referred to as the academic model, and is centered upon research and publication (Cheit, 1985).

A unique irony exists in the history of business studies in higher education. In the early years and continuing through the 1960s, business education was deemed to be vocational in nature. It did not have the academic pedigree of traditional courses in the arts and in the sciences. Business school academicians responded with a plethora of research and publications coming during and after the 1960s. This led to the commentary, which continues today, that business in higher education has become too academic and has lost its practical relevance in the marketplace (Cheit, 1985).

21st Century Skills

A new term for an old concept has been introduced in the business lexicon over the recent past. The term, used by academics and practitioners alike, is 21st century skills, also referred to as 21st century competencies. Voogt and Roblin (2010) claimed that 21st century skills are skills, knowledge, and natures needed in the modern-day knowledge society.

The Discussion and Definition of the 21st Century Skills

As society moved into the 2000s, emphasis was placed on the dawn of the new millennium and the skills needed to meet the forthcoming challenges and opportunities. Thus, there evolved a set of common understandings of skills and competencies needed for success in the future. These understandings became known as the common core of 21st century skills (Voogt & Odenthal, 1997). Common core skills permeated the different disciplines and contexts of everyday life. Elements of the core included collaboration, communication, information and communication technology, cultural competencies, critical thinking and problem solving. As the business and society moved into the new era, the 21st century skills became more profound and of higher profile. Society not only faced a change in the types of jobs that are needed, but young people also needed to be educated for a job that did not yet exist (Voogt & Odenthal, 1997).

Anderson (2008) further developed the theme of the knowledge society skill set. He asserted that the future demands begin with communication and teamwork. These are two skills at opposite ends of the scientific-social spectra. According to Anderson, the knowledge society skill set also includes information processing in organizing, retrieving, and managing vast amounts of data and general information. Finally, Anderson suggested that society take a new look at knowledge construction and adaptability as essential abilities.

Competencies for 21st Century Preparedness

The business environment has long been known to be in dynamic flux. Changes are the rule rather than the exception, and new strategies and techniques for business success emerge in a constant ebb and flow of thought and strategy. Business schools become the conduit of preparation for the new entrants of graduates into the business world. The great challenge is that colleges and universities become the reactive agent in this relationship. Dynamic forces exist in

the business world, and those needs are translated to the institutions of higher education that must react accordingly. This model becomes a reactive element to the ever-changing powers in the marketplace (Kavanaugh & Drennan, 2008).

Casner-Lotto, Barrington, and Partnership for 21st Century Skills (2006) published a report that identified basic and applied skill sets that employers feel are necessary for graduates entering the workforce. They combined the results into a mixed ranking which shows that the most important skills for the 21st century workforce are (a) oral communications, (b) collaboration and teamwork, (c) work ethic and professionalism, (d) written communication, and (e) problem solving and critical thinking. Employers reported that only 23.9% of four-year, college-educated graduates were ranked as excellent in regard to their preparedness for the workforce (Casner-Lotto et al., 2006).

Employers rated college graduates deficient in applied skills. Businesses rated problem solving and critical thinking as excellent in only 27. 6% of the college graduates. Oral communications followed with 24.8% of employers rating college graduates as excellent with teamwork and collaboration at 24.6%. Only 15.8% of college graduates were rated as excellent in written communications skills (Casner-Lotto et al., 2006). Moreover, they predicted that applied skills will increase in importance over the next several years. Businesses reported critical thinking and problem solving as among the most important skills for the future. Casner-Lotto et al. (2006) continued by stating that they felt graduates will be expected to know and apply information and technology skills, followed by teamwork and collaboration, innovation and creativity.

Business Schools: Searching for Their Place

Business schools find themselves in a constant reevaluation of their place in the dynamics of business as a vocation and business as an academic discipline. Clearly, the business schools are a servant to the marketplace. They are in a constant struggle to evaluate, review, and respond to the needs and dictates of the business world. According to Tanyel, Mitchell, and McAlum (1999), the intent is to provide a pipeline of skilled and able workers ready to meet the dictates of modern business. They further asserted that the educational arena is replete with the competitive elements, which are challenged to meet the needs of the business community. The traditional higher education model is no longer the sole source for the supply of workers to business (Tanyel et al., 1999). Competitive pressures exist in distance learning, in-house training, and experiential programs.

Raymond, McNabb, and Matthaei (1993) conducted a study, which featured perceptions of skills most important for entry-level success of new graduates. They looked at the perceptions of both employers and students preparing to enter the workforce. They found that employers and students responded in a similar manner with the perception of written skills, dependability, oral skills, interpersonal skills (teamwork), and motivation as the drivers for success in the workplace. With perceptions very close to one another, the study noted that businesses were disappointed in that business schools did not respond by ensuring that these skills were addressed in the curriculum (Raymond et al., 1993).

The B-school is like any institution of education as it is engaged in matters of socio-cultural design. The fundamental issues which face the business schools are (a) how they have evolved to their current state and (b) what cultural paths are open to them (Owen, 1994). Leavitt (1989) stated, “The MBA degree distorts those subjected to it into critters with lopsided brains, I

see hearts, and shrunken souls" (p. 39). Bloom (1987) described business schools as "a critical indicator of the closing of the American mind, a great disaster . . . a diploma that is not marked of scholarly achievement" (pp. 369-370). Salbu (2002) added to the criticism: "Too often we turn out ambitious, intelligent, driven, skilled over-achievers with one underdeveloped aptitude. Too many of the business leaders we graduate are hitting the ground running, but we have forgotten to help them build their moral muscles" (p. xiv).

Scheetz (1995) identified competencies of success needed by college graduates as they enter the workplace. According to Sheetz, these competencies were deemed necessary for future success, both immediate and long-term. The 21st century skills clearly dominated the Scheetz research. Sheetz contended that communication and teamwork were the skills most likely to land success in the modern-day workplace.

According to Sheetz (1995), the skills and competencies of the best new college graduates included a high level of energy and enthusiasm, quick learning, a working knowledge of computers, good-to-excellent written and oral communication skills, strong organizational skills, a team-orientation, and a willingness to learn all aspects of the business from menial to challenging tasks. Thus, computer literacy, leadership abilities, analytical thinking and problem-solving skills, foreign language competency, and flexibility/adaptability were listed as the competencies necessary for new graduates (Sheetz, 1995).

Levenburg (1996) contributed to the academic research on competencies. Following the Scheetz study, Levenburg observed managerial skills from the business school faculty and from the business practitioner perspective. Among those skills reported as important from the faculty/practitioner perspective included communication skills (oral and written), presentation skills, the interpersonal skills of teamwork, problem analysis skills, and an appreciation of

different cultures (Levenburg, 1996). In another study during that same time period, Kryder (1997) recommended skills necessary for B-school graduates. At the top of the list were oral and written communication skills, as well as teamwork, computer competency, and multicultural relationships. Messmer (1997) identified the important skills of the future to be interpersonal communication and teamwork.

The common elements of the above-mentioned articles are communication and teamwork. The technical and discipline-specific elements of business are addressed adequately in the mainstream curricula, as it currently exists. The literature supports two of the elements of emphasis for the 21st century to be interpersonal skills of communication and teamwork.

Casner-Lotto et al. (2006) reported that businesses are requiring four-year college and universities to be the driver for workforce readiness in the future. Moreover, 68.4% of businesses felt that the colleges and universities have that obligation to prepare the future employees accordingly (Casner-Lotto et al., 2006). Businesses feel a modest and slight responsibility for employee readiness with 11.4% of businesses accepting that internal burden. Businesses noted that state governments, local governments and federal government have modest responsibility for workforce preparedness. Businesses expect new employees to be adequately prepared for the challenges and opportunities that present themselves in the workplace (Casner-Lotto et al., 2006).

Fischer (2007) reported on a comment made by Jack Welsh, a long time management icon and former CEO of General Electric, who was once asked by a business student what the most important subject is in business schools today. Welsh remarked to the student to just concentrate on networking. He continued by saying that everything else you need to know you can learn on the job. Fisher noted that the point that Welsh made in his comment was that the

hard skills such as accounting, marketing, finance, etc. are most often reviewed and addressed on the company level (Fisher, 2007). The subject matter can be taught and the skills developed by instruction and rote memory. The skills that matter are not as easy to teach. These are skills sometimes referred to as soft skills or people skills–that is, those skills that require the personal interaction within a dynamic environment (Fisher, 2007).

Fisher (2007) suggested that the traditional business school model is evolving more to the marketplace in which businesses operate. Businesses respond to their various customers in a way that they think is appropriate. The problem with this is that many times the business school makes assumptions on what they think the corporate world needs and desires. Beginning in 2002, the GMAC (Graduate Management Admissions Council) conducted a survey of business recruiters. The skills of writing and speaking were consistently emphasized by the recruiters taking the survey (Fisher, 2007).

In 2005, the Wharton school began a leadership program with the emphasis of one-on-one mentoring from practicing professionals (Fisher, 2007). This program began modestly, with 50 students. Within two years the course doubled in enrollment and had a waiting list each time the class was offered. Balaj Krish, a Wharton student, said the business curriculum had prepared him for a team-oriented world. Krish stated that students worked on 10 to 15 different teams before they complete the curriculum. This attitude among high-level business schools further indicates the attention of teamwork in workforce readiness (Fisher, 2007).

The Tanyel Studies and the Value-Added Curriculum

Tanyel et al. (1999) conducted research including prospective employers and university faculty. The intent was to determine how closely the prospective employers' needs align with the current college and university value-added curriculum. The university faculty responded

with the following in order of importance (a) responsibility and accountability, (b) oral communications, (c) written communications, (d) creativity in critical thinking, (e) time management and punctuality, and (f) decision-making in analytical ability. Tanyel et al. (1999) then compared the list of importance to the responses given by prospective employers. The perspective employers responded (in order of importance) as (a) responsibility and accountability, (b) ethical values, (c) interpersonal skills, (d) oral communications, (e) time management and punctuality, (f) ability to work in teams, and (g) decision-making and analytical ability.

Tanyel et al. (1999) concluded that even though the academic world and the practical world were similar in their rankings, in some respects, they differed on seven of 16 attributes considered. This represented approximately 44% of the total. The Tanyel study illustrated the need to have a close relationship between the practitioner and those in academia.

The B-School and the Business Community

Voogt and Roblin (2010) argued that it was the responsibility of schools to establish the relationship with the business community. According to Voogt and Roblin, educational institutions must be the conduit and/or the link between student readiness and the business community. Current business curriculum is not centered on the 21st century skills. Voogt and Roblin called for a change in curricula so that competencies can be addressed and students can develop competencies for the 21st century.

Technology is the driver of changes in society (Voogt & Roblin, 2010). More specifically, it is the dynamic changes in technology that necessitate an emphasis on the 21st century skills. An apparent lack of urgency exists within educational institutions to address the

situation. Society, which includes businesses, will not dictate its demands of 21st century skills. It is the obligation of education to meet these needs.

Competencies for the 21st Century

A common mantra among schools of business is to "prepare men and women for positions of managerial responsibility" (Buckley, Peach, & Weitzel, 1989, p. 101). This logically leads to the conclusion that business schools must know and understand which competencies and skills will lead to the greatest level of preparation for the business graduate of today (Maes, Weldy, & Icenogle, 1997). The greater the understanding of the competencies and skills needed for the workplace, the better business schools will prepare students. Andrews and Higson (2008) stated that the ideal competencies expected by employers in the workplace represent a compilation of tangible and intangible skills. Employer expectations are a combination of "hard business skills" and 21st century skills. Employers have come to expect a high level of competency in the hard skills–i.e., those technical skills which are discipline-specific. Examples of the hard skills include the technical and working knowledge of accounting, economics, management, and marketing (Andrews & Higson, 2008).

Research of 21st Century Skills

Andrews and Higson (2008) found that employers appreciate the ability of new graduates to think in a critical and analytical manner. The employers tend to look for a graduate with the critical thinking ability and the ability to express those thoughts through interpersonal communication competencies. This is the expectation of employment-ready new graduates versed with the competencies and skills necessary to operate in the modern business environment.

Of particular importance, Andrews and Higson (2008) found that employers were dismayed at the lack of sufficient preparation and accumulated expertise in making oral presentations among new employees coming from higher education. Fallows and Stevens (2000) emphasized the importance of including presentation skills as a part of the undergraduate curriculum. The Fallows and Stevens study noted that business graduate employability would be enhanced if schools of higher education actively pursued avenues in which students have the opportunity to acquire and define these "softer" communication skills.

Hodges and Burchell (2003) researched business graduate competencies from the viewpoint of employers. They found that employers consider ability and willingness to learn as two of the most important competencies in the workplace today. This observation was supported by two other research studies. Coll, Zegwaared, and Hodges (2002a) noted that both science and business employers expect those same competencies. These studies supported Stephenson (1997) in his assertion that employers today see that success requires confidence in one's ability to command a personal and specific knowledge base. Stephenson's studies indicated that new employees must have a desire to acquire new skills to meet the demands of a dynamic workplace. Stephenson's research suggests employers hold knowledge potential as important as current competency.

Cappelli (1995) found that an important issue to employers is a graduate's attitude and commitment. He saw, through his experience, that graduates expect quick feedback on their work performance and become dissatisfied and have negative attitudes when they are not given rapid advancement. The lack of a real-world experience leads to a narrow vision of reality for many new workers. They have not developed a depth of understanding of the professional workplace, as they tend to be very self-focused and have not developed wisdom (Cappelli,

1995). Some skills can be trained, but the powerful drivers of success such as motivation, passion, and a will to succeed are internally cultivated and require time and experience. New graduates are assimilated into the workplace with the belief that they understand the challenges and opportunities they face only to find that they lack the time-tested lessons of experience. Employers have found that it takes no less than six months to close the competency gap (Capelli, 1995).

Unreasonable expectations on the part of new employees contribute to a misunderstanding of the reality of the modern workplace (Cappelli, 1995). This manifests itself in a flawed drive to succeed and a real deficiency in a workplace attitude. New employees may not have the commitment to the employer who has made a significant investment in professional training (Cappelli, 1995).

The Hodges and Burchell (2003) study supported the findings that employers want well-rounded employees coming from institutions of higher education. Of particular importance, employers look for 21st century skills and the ability of the business school graduate to deal effectively with client and customer necessities. Boud and Garrick (1999) found that the business school today is not seen as the vehicle able to develop the type of graduates demanded by today's workforce. The deficiency seems to be in 21st century skills. Boud and Garrick noted that the traditional model of education is no longer sufficient to satisfy the modern workplace requirements.

Boud and Garrick continued with the thought that the new watchwords for the 21st century become flexibility, teamwork, and communication skills. This traditional model needs to be redesigned and implemented in the schools of today. The recast model must be initiated at

every level of education, including the K–12 arena, the high school environment, and ultimately the institutions of higher education.

Davison, Brown, and Davison (1993) found, in an earlier study, that employers felt the business school graduates have an unrealistic expectation of the workplace environment. These young men and women are lacking in teamwork and interpersonal skills. Hodges and Burchell (2003) suggested that the emphasis should be from employment to employability. Zuboff (1988) commented that learning is no longer a silo activity, engaged within itself for the betterment of an individual. Instead, learning is an all-encompassing activity, which invites experiences in all facets of life. The 21st century learner gains insight from the classroom and then receives confirming reinforcement from the practical environment. The workplace is a learning environment in the same sense that the classroom is a learning environment (Zuboff, 1988).

The Gap Between Preparation and Practice

The most desirable professional work environment is one in which the ideas, preparations, and expectations of the employer and the college graduate all agree. However, the literature suggests otherwise–that a disconnect exists between the preparations and expectations of the college graduate and the satisfaction of the college graduate to that of the prospective employer. According to Ingbretsen (2009), employers seek candidates with an ability to work well in teams, effective communication skills (verbal and written), productive clinical skills, and a strong work ethic. Ingbretsen also stressed the importance of a positive and effective work ethic as demonstrated in a positive work attitude.

English, Manton, Sami, and Dubey (2012) studied the perceptions of undergraduate and graduate students. They identified 26 different qualities and asked each group to rank these qualities by personal preference. The difference between the undergraduate and graduate group

was very modest and inconsequential for this writing (English et al., 2012). Regarding 21st century skills, the undergraduate students ranked their perceived abilities to work well with others as fifth most important, critical thinking as 10th most important, abilities to express oneself orally as 14th, and possessing strong writing skills as 19th. This ranking shows that undergraduate students perceive 21st-century skills as less important and significant than their business employer counterparts (English et al., 2012).

When comparing the above to the needs and attitudes of employers, the gap between students and businesses becomes apparent. Ingbretsen (2009) identified five personality traits employers find most appropriate: (a) written and verbal communication, (b) a strong determination to excel, (c) a high value of teamwork skills, (d) highly developed analytic skills, and (e) strong initiative to achieve.

Ingbretsen (2009) claimed that candidates in consideration for professional positions must have a higher level of understanding of the elements necessary for professional excellence. Given the level of resources at their disposal, they must demonstrate a depth of competency by using these skills. To do so will set them apart from other candidates. Ingbretesen (2009) stated that the majority of employers have adopted the mantra *hire attitude, train skill*. Capable college graduates have the ability to learn new and different skills. Those graduates possessing a poor attitude cannot or choose not to find those skills most suited for the 21st century. The company or organization would rather not make the investment in time and money to change the attitude of a new employee; instead, businesses will seek out those students who have made the investment in skill development (Ingbretsen, 2009).

Employers today look for college graduates who can apply the theory of business in a real context. They look to new employees who can clearly communicate both in writing and in

verbal expression. In short, employers are looking for candidates that they feel can meet the requirements of the job (Ingbretsen, 2009).

Maes et al. (1997) reported on a research study that revealed that oral communication is the competency regarded highest by employers of college graduates. The subject of skills and competencies in the job market is not a new topic to academic inquiry. Researchers have long reviewed and reported on the elements most admired by employers. Much of the blame for unprepared job market candidates has been leveled against business schools (Applebome, 1995). Even with this research at hand, most schools do not emphasize the competencies and skills needed to enter and thrive in the business world.

The Mintzberg Managerial Roles

Mintzberg (1973) identified 10 roles that managers assume in the course of their responsibilities. Those roles include liaison, negotiator, disseminator, spokesperson, and monitor, figurehead, entrepreneur, disturbance handler, leadership, and resource allocator. Of this group the first five are directly related to communication and the rest have a strong linkage to communication effectiveness (Alexander, Jernigan, & Henwood, 1991). Buckley et al. (1989) reviewed studies from 1975 and 1983 that identified characteristics deemed desirable in the hiring decision. The comparisons showed that the rank order of desirable skills changed from 1975 to 1983 with communication skills (written and oral) as the most desirable in the 1983 research study. Buckley et al. felt that as the economy moved toward a service economy, the communication skills will remain as the most highly regarded skills.

The Ebb and Flow of Popular Curriculum

Maes et al. (1997) reported that business school curriculum has gone through periods of fads and favored topics. Many times the "flavor of the day" moves in and crowds out the earlier

theme. This was evident in the mid-1970s when business schools were in a period of quantitative analysis. Students were taught that decisions can be a function of inputs subject to formulas and schema which drive answers derived from such science. This created an imbalance of creative thought and logical decision-making. The analytics were overdeveloped at the consequence of logic and human interaction (Livingston, 1973).

Maes et al. (1997) pointed out that the research from Webber (1976) advocated that recent graduates have underdeveloped interpersonal skills. All of this leads to the notion that business schools are underpreparing graduates for the employment marketplace leaving them without the skills appreciated by employers. Additionally, Thompson and Smith (1992) asked 20 human resource managers to express their feelings of competencies in the new workers graduating from college. They reported that business graduates generally lack competencies in teamwork, computer skills, problem solving, and communications.

Porter and McKibbin (1988) reported that graduates were ill-prepared for employment following their courses of studies in business schools. Over the years many other researchers have echoed a similar concern. The common feeling is that graduates are coming out of business school with technical skills and abilities but are lacking in the 21st century skills. It is incumbent upon the business schools to address the competencies that businesses value as critical to successful managers (Bennis & O'Toole, 2005; Mintzberg, 2004; Pfeffer & Fong, 2002).

Abraham and Karnes (2009) published the results of their study, which was designed to compare the skills developed in an undergraduate education with the expectations of employers. Businesses were first asked what competencies they considered to be important in new graduates entering the job market. Those answers were then compared to the business school curriculum to see whether business schools were adequately preparing students for the business arena. The

first conclusion was that businesses and business schools are reasonably close in identifying the competencies necessary for success (Abraham & Karnes, 2009). Competencies such as communication, problem solving, working in teams, and interpersonal skills ranked high with business schools and businesses. Abraham and Karnes observed that upon further review, a gap appeared between the competencies emphasized in business and the competencies that are frequently addressed in undergraduate business programs. Business schools do not emphasize the same competencies in their business programs that they acknowledge as necessary for success. This conclusion confirmed the research of Rubin and Dierdorf (2009), Langbert (2000) and Sadri (2002) in regard to the link between the competency needs of business and the competency components of business school curriculum.

Criticisms of Business Schools Under the Current Model

Business schools have been challenged with their place in academia since the early beginnings of the discipline (Cheit, 1985). The Wharton gift in 1881 to the University of Pennsylvania is considered to be the entrée of business into academia. Immediately, criticisms and challenges came from the academic community (from within and from outside the University of Pennsylvania) calling for justification for the study of business to reside alongside the traditional academic institutions such as the arts, sciences, and the humanities. In concert with the criticism came the urgency felt from business as an academic discipline to justify itself (Cheit, 1985).

This vetting process, which began in 1881, continues through today. Colleges and universities felt it was important to subscribe to the academic model of traditional compliance. That model included an emphasis (almost totally) on research and publication commonly referred to as the scientific model (Bennis & O'Toole, 2005).

Hatchuel and Glise (2004) were critical of the current business school model in the fact that it does not accommodate innovation in a way that requires the collective learning of individuals. Starkey et al. (2004) asserted that academia has been a poor source for new practical business models. They felt it was incumbent upon the business schools to employ new research strategies to embrace theory and practice. Management research should be seen as a research and development (R & D) function that is nurtured from the partnership between the practice of business and the honor of academic pursuits (Shani, 2003). "This form of collective learning is in itself emblematic of...new models of management. It is a sign of consistency that the form of research advocated corresponds to the type of management model we look forward to developing" (Hatchuel & Glise, 2004, p. 20).

Kerr (2001) stated that the current business school construct has been challenged as a consequence of the shift of faculty purpose from teaching to research. Faculty have not responded to the popularity in the business school with research relevance to the practical nature of the discipline. The common criticisms of the faculty focus upon the irrelevance of their research (Kerr, 2001). Institutions of higher education have long subscribed to the dual function of education and the search for meaning. This has transcended through critical contemplation and research (Delanty, 2000). The business school is now under attack from its most formidable stakeholder, the student. Students look upon the business schools as sellers and consider themselves as the consumers. This relationship puts the B-school into the producer/consumer relationship which is driven by the principle of value received for money spent (Reading, 1999).

The Scientific Academic Model

From the beginning of the 1900s through the 1950s, business schools subscribed to the scientific model that seemed to be the quickest way to acceptance as a discipline in higher

education (Bennis & O'Toole, 2005). Very little continuity existed among universities regarding any general and consistent business initiative. Schools of higher education set about their own individual paths for acceptance in their own universities. The "industry" of business programs in higher education was very ill defined and without a champion. In a similar way, criticisms and commentaries on business schools, in general, were disjointed and without widespread acclaim (Bennis & O'Toole, 2005).

In 1959, the Ford and Carnegie foundations financially supported two different studies. These studies are known as the Gordon-Howell and the Pierson reports (Gordon & Howell, 1959; Pierson, 1959). These reports reviewed different business student populations with the Carnegie Foundation most concerned with undergraduate business education and the Ford Foundation interested in graduate studies of business (Khurana, 2007). Even though these reports featured different programs and populations, they produced very similar conclusions. Gordon-Howell and Pierson were highly critical of the state of business education in colleges and universities. They challenged academic institutions to become more academic and to focus upon research and writing (Cheit, 1985).

Business schools should be constituted in a way similar to the scientific disciplines of economics, statistics, and operations research (Podolny, 2009). H. A. Simon (1991) commented that, at this time, business schools were touted as a "wasteland of vocationalism" (p. 75) and were being pressured to pursue the scientific model as a basis of professionalism.

These reports were the prompting mechanism to establish business education throughout all levels of higher education. It established, in effect, the standards for which business education should subscribe (Cheit, 1985). The Ford Foundation and the Carnegie Foundation financially supported five institutions of higher education to be the models of business programs

in academia. Those five institutions were Columbia University, the University of Chicago, Stanford University, Harvard Business School, and the Carnegie Institute of Technology's Graduate School of Industrial Administration. These institutions were called the New Look (Khurana, 2007). This group of five institutions established the model of business school programs, including representations of business research based in the social science model and quantitative analysis (Dostaler & Tomberlin, 2013).

Science as the Driver in Business Education

The years to follow were marked with the scientific mentality of research and publication. Business curricula had entered the quantitative arena. Research concepts and techniques brought to the business schools the notion that the new era of business management would be driven by formula based problem-solving and decision-making (Behrman & Levin, 1984). With quantitative analysis as the standard of business education, a chasm was created between research and business practice in business schools (Dostaler & Tomberlin, 2013).

Young professors were entering the arena of higher education with the scientific mindset. Research became more scholarly as theories were tested and the quantitative thoughts and ideas became the apex of the academic pursuits (Dostaler & Tomberlin, 2013). These young professors continued their research and trained others to follow in their stead. This was a self-perpetuating condition in which the elite schools reworded such pursuits with recognition and tenure. Those that were rewarded in this way continued to pursue their professional practice through research and publication. All the while, the gap between theory and practice continued to exist (Dostaler & Tomberlin, 2013).

The Scientific/Practice Gap and the Response to the Business Community

This history has worked to justify a cultural heritage for business schools throughout the country. The drift toward scientific research and away from practical research has created a disappointment within the business community (Dostaler & Tomberlin, 2013). The products (graduates) become very skilled in both technical, research, and academic writings. Although fraught with academic acclaim, the disappointment to business is that there is a bias to the scientific at the consequence of practical (Dostaler & Tomberlin, 2013). This became somewhat of a zero-sum game in which there is a finite amount of time, effort, and energies available for college education. To wit, emphasis on one side (academic) necessarily causes a consequence to the other side (practice; Dostaler & Tomberlin, 2013).

The criticisms of business schools and their graduates continue to the contemporary society of today. Podolny (2009) suggested that distrust and disappointment pervade the attitude of the business community. His beliefs and ideas are summarized below:

> Many people believe that management education has contributed to the systematic failure of leadership that led to the current financial crisis. That may be so because 1) a focus on values-based leadership and ethics has not been central to management education and 2) even when B-schools teach leadership they foster the belief that CEOs should focus on the big picture-not the practical details. (p. 63)

Podolny (2009) felt that business schools must instill trust through a concerted effort to emphasize values and ethics as much as formulas and analytics. Business is a microcosm of society, of economics, and efficient use of resources. Business schools should act as professional institutions and refrain from touting the materialistic accomplishments of its graduates.

Podolny (2009) claimed that business schools found comfort in the scientific arenas that have been self-defined as academically appropriate. Programs of business in higher education have left the teaching of ethics in the wake of their desire to climb the media rankings. Podolny (2009) felt that ethics and moral conduct come dangerously close to be given a minor presence in traditional business school thought.

Many professors have not been trained or are comfortable in the qualitative side of business education. According to Podolny (2009), some found that it led to an arena outside of their expertise and, given academic freedom, they tended to stay away from normative topics of business. Podolny asserted that trust is a source of the chasm that exists between academia and practice. He looked at key elements to close the gap and bring academia and practice in line with one another. Podolny's model included fostering greater integration, the use of teaching teams in academia, find a renewed emphasis on qualitative research, the de-emphasis on B Schools rankings, and enforce a code of conduct for the practice of business.

Literacy in the Digital Age

Businesses, business schools, and society are faced with a dilemma. That dilemma is that business school graduates are expected to be able to contribute and thrive in the modern business environment. The key measure of that survival is seen in the context of the 21st-century skills. Command and mastery of the 21st-century skills represent the conduit to meet the expectations that we have for the future (Burkhardt et al., 2003). In the decades of generations past, the basic knowledge of reading, writing, and arithmetic were enough for a young man or woman to begin a business career. The challenges of the business arena could be met with a solid foundation of the basic education. A true emphasis on business discipline was not realized until the war years and beyond (Burkhardt et al., 2003).

Today's world is reflected in the dynamics of the environment. Changes are frequent, and the breadth of business issues and considerations are significant. Everyday issues are addressed in *real time*. That is, the changing environment is driven by the fluidity of change, which happens instantaneously (Burkhardt et al., 2003). The consequences (both positive and negative) of real-time dynamics manifests itself quickly and are both significant and immediate. According to Burkhardt et al. (2003), we are all united together through an electronic network that allows us to talk, share, see, and work with each other beyond the bounds of traditional constraints.

The question is, "How do we deal with this new and changing work environment?" The answer lies in the institutions of higher education. No longer can we expect businesses to educate and train their employees on an as needed basis. New employees must be educated and prepared to not only exist, but also to flourish in this arena of ever-changing issues and consequences (Burkhardt et al., 2003).

The Modern Workplace

Societal changes, such as the need to have information quickly and respond appropriately, become paramount in the dynamics of the business world. How is the modern world different from previous eras? According to Burkhardt et al. (2003), the workplace has been guided by electronic monitoring, computing, and analysis. The world exists in a dynamic environment of change. Many of the ideas, concepts, and theories of modern existence are changing almost as they are defined. Students matriculate in this ever-changing environment and enter the world with expectations to contribute immediately. The 21st century skills become more and more important as a conduit to a highly functioning society (Burkhardt et al., 2003).

Technical skills must be augmented with 21st century skills; i.e., those skills necessary to take technical applications and make meaning and contributions to today's society. In order to use the 21st century skills appropriately, one must understand what they are and their impact to his/her own life and to society in general. The schools become the natural conduit to expressing and developing the skills within the students today (Burkhardt et al., 2003).

The enGauge Model

The best representation of 21st century skills in modern society is presented by North Central Regional Educational Laboratory and the Materia Group in their enGauge 21st Century Skills model (Burkhardt et al., 2003). The enGauge 21st century skills are divided into four quadrants. Each quadrant represents a critical skill area necessary for timely contribution to the work environment. These quadrants may have different weights according to the particular business arena, but each quadrant contributes to a whole of understanding of skills needed in the 21st century.

The first quadrant is digital age literacy. This represents the technologies that are used and taken for granted in everyday life. Included in this quadrant are sciences information and global awareness. Burkhardt et al. (2003) claimed that graduates entering the workforce must have a degree of comfort within the scientific arena, which includes economics and technological literacy. In addition, they must be able to interpret, appreciate, and use communication media, both conventional and 21st century, in such a way that it advances thinking, learning, decision-making and, most importantly, communication. Given that the cultural divide of the world is becoming smaller through technology, the 21st century worker must be comfortable in appreciation and understanding of different cultures and ideologies (Burkhardt et al., 2003).

The second quadrant addressed the concept of inventive thinking. As the world changes, complexities abound. Inventive and creative solutions are required in the new millennium. Workers must be adaptable and be able to manage complex situations. Risk-taking and creativity will be the norm of the 21st century worker (Burkhardt et al., 2003). High-level reasoning and broad-based thinking will be the expectation and the driver of worker productivity in the future. Traditional and generally accepted norms and routines will give way to creative solutions (Burkhardt et al., 2003).

The third quadrant deals with high productivity. This will be an expectation of workers in the future. Tools and resources are at the disposal of the 21st century worker to energize the higher order thinking into the digital age literacy. The high productivity worker is one who manages for results, must be skilled in planning and organizing, and have the ability to prioritize among many options that are available (Burkhardt et al., 2003). The 21st century worker will be effective in using real-world tools and resources. The consequence of the high productivity worker is to produce relevant results in an effective and efficient way (Burkhardt et al., 2003).

The final quadrant of the enGauge 21st Century Skills model focused on effective communication. Communication is the cornerstone to success in the 21st century. Communication has various factors such as teamwork, collaborative relationships, and interpersonal skills (Burkhardt et al., 2003). It is uniquely human, with its effectiveness seen in the sending and receiving of information. The digital age has brought about significant change in the arena of communication. The 21st-century worker must be skilled in the sharing and receiving of information (Burkhardt et al., 2003).

The enGauge 21st century skills (Burkhardt et al., 2003) are a result of research, review, and trends from industries and business. Input from educators, businesses, and constituent

groups contributed to the delineation of the skills. EnGauge proposed a process for instituting 21st century skills into the classroom. The first step places the burden on teachers to understand and appreciate the value of 21st century skills (Burkhardt et al., 2003). When teachers and instructors are comfortable with the rationale behind the 21st century skill innovation, they are comfortable with embedding the skill developments into the classroom. Step 2 is the advocate stage. This step challenges teachers to proceed with a sense of urgency in sharing these skills with others. This step included skill definition and consequence to the learner, to businesses, and society in general. The third step focuses on finding the place in which these skills are introduced and making a commitment to encourage the skills (Burkhardt et al., 2003).

Step 4 is the action phase in which the 21st century skills become reality to the students. In this phase, schools, teachers, and students implement the skill development into coursework projects, and activities. The final piece as described by enGauge is the impact. This deals with implementation and the active use of the skills. This includes a support system for success (Burkhardt et al., 2003).

Figure 2 is an illustrative concept of the 21st century skills needed to meet the demands of the future. Note the four quadrants of (a) digital-age literacy, (b) inventive thinking, (c) effective communications, and (d) high productivity. These quadrants represent the foundation issues needed for 21st century competence (Burkhardt et al., 2003). Educational institutions must incorporate these quadrant issues in curriculums in order to prepare students for a dynamic environment post education (Burkhardt et al., 2003).

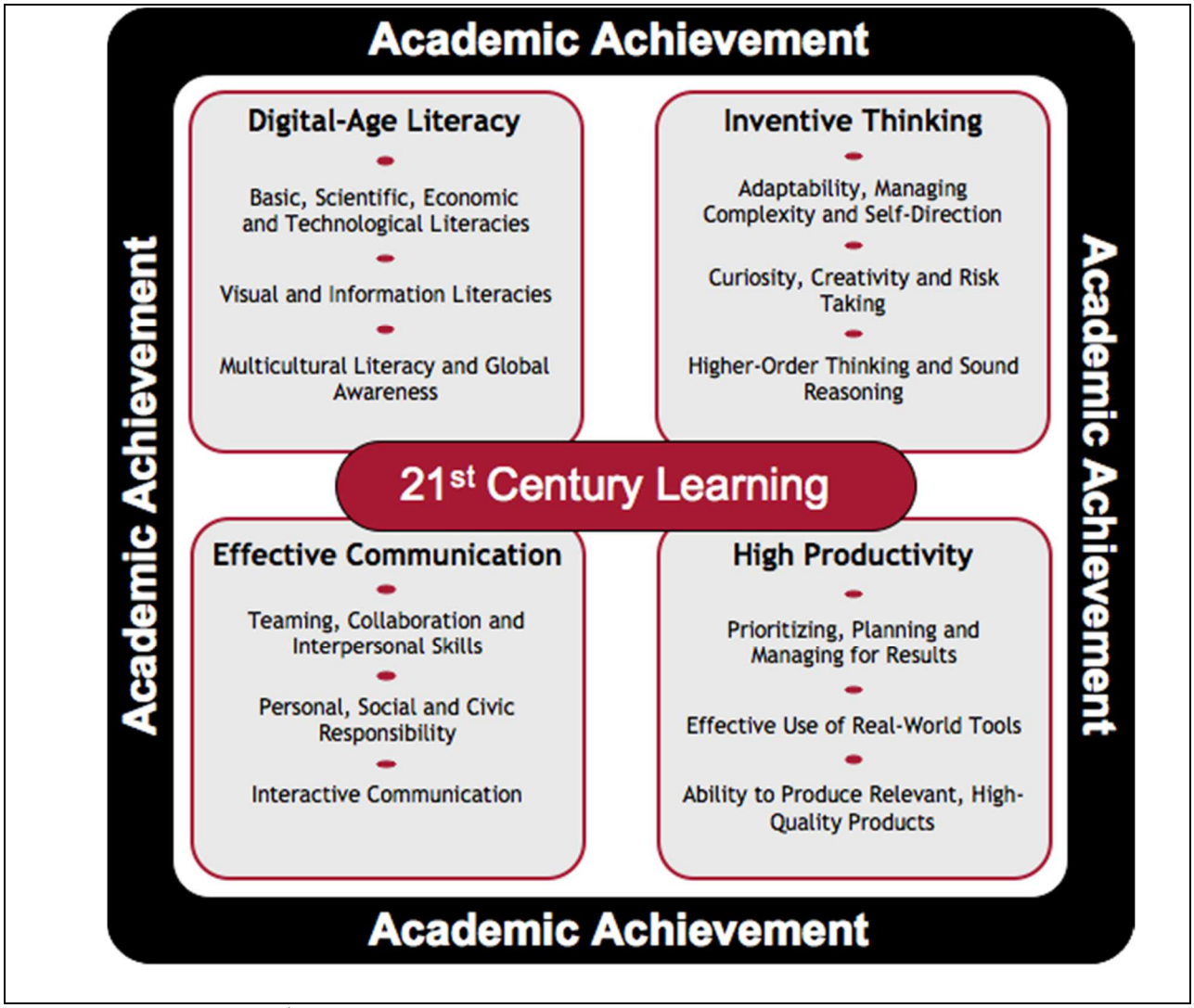

Figure 2. enGauge 21st Century Skills. Reprinted with permission. Granted December 30, 2014 M. Ramirez, American Institutes for Research

Stakeholder Issues

The business school curriculum is the center of discussion and debate regarding the place of business as a discipline in academia. Curriculum discussions and debates have been a frequent topic since the introduction of business in higher education in 1881. Discussion such as

practical relevancy, the responsibility to the social good, and academic veracity have featured curriculum topics throughout the years (Burkhardt et al., 2003).

Stakeholders in Business Schools

Trank and Rynes (2003) looked at the influences of curriculum as it exists in today's social and business environment. They identified five stakeholders or influencers of modern business curriculum. Each of the stakeholders exerts an influence in the direction and the current condition of business school curriculum. The stakeholders are (a) businesses, (b) media and ranking services, (c) students enrolled in schools of business, (d) accrediting organizations, and (e) business schools.

Business schools as stakeholders. In the late 1800s and early 1900s, few influencers were found upon business curriculum. The discipline of business was new to academia, and each higher education institution that offered a program was free to develop its program in a way officials felt was in the best interest of the stakeholders (Trank & Rynes, 2003). The decades following the 1920s were a time in which business schools defined themselves within the context of academia. The general feeling was to subscribe to the academic model in the desire to be accepted by the higher education academic community. The curriculum was loosely contrived, and the feeling of trade school continued to prevail (Trank & Rynes, 2003).

The late 1950s saw a turning point in the curriculum toward a more professional posture. This attitude subscribed to the characteristics of a profession. The characteristics, as described by Trank and Rynes (2003), followed a three-step progression. The first step represented strict rules to keep out the unqualified. This was followed by the second characteristic, which required the discipline of business having a strong ideology and a moral and ethical construct. The final

characteristic referred to the nature and purpose of ideological understanding (Trank & Rynes, 2003).

Business schools sought to promote the discipline of business as a profession rather than a vocation. The conversation of where business lies in the profession/vocation debate continues today. Most business schools represent the discipline as a profession, replete with research and publication. Criticisms abound that schools of business maintain an ivory tower attitude and discount the works of practitioners, those actually in the arena (Trank & Rynes, 2003).

Businesses as stakeholders. Trank and Rynes (2003) continued their discussion with commentary on stakeholders' influence in the development of curriculum in business schools today. Stakeholders first appeared during the 1950s and 1960s in the business sector. It was during this time t private businesses supported the concept of B-school professionalization. Businesses encouraged schools to emphasize quantitative approaches to business education (Trank & Rynes, 2003). They asked for students who were comfortable with mathematical concept and theory. Businesses embraced the fact that business schools were drifting away from the vocational focus and finding their place in the professional arena (Trank & Rynes, 2003).

Business schools followed the encouragement from the business community regarding curriculum development and began a period of time of inquiry and testing of various curriculum models. Curriculum themes were prevalent in business schools from the 1950s through the present day. Those themes included professionalism, shareholder value, profit maximizing, and business specialization (Trank & Rynes, 2003).

Trank and Rynes (2003) contended that the theme for the early-to-mid 2000s was specialization. Today's coursework focuses on a very narrow niche. The emphasis is no longer

on the macro business concepts. Business school curriculum has drifted away from the general studies model to the course-specific model.

In support of moving toward a more general curriculum, Trank and Rynes (2003) stated, "Giving students skills in applying current commodified knowledge is like giving them a fish, whereas giving them professional education is like teaching them how to fish" (p. 194). They saw business curriculum to be most effective in a holistic sense. The science and analytics have its place within the business curriculum. However, in the view of Trank and Rynes (2003), the technical skills should not dominate or crowd out the human relations skills of communication, teamwork, and other 21st century skills.

Students as stakeholders. Students represent another important influencer in business school curricula. According to Trank and Rynes (2003), students tend to respond to the signals they perceive from the business arena. In short, they want to give businesses what they think businesses want. Bok (1996) stated that students tend to respond to and pursue those courses and programs that enhance their earnings potential and prospects of successful business careers. Today's students are results oriented, emphasizing skills and knowledge that lead to employment (Trank & Rynes, 2003). The preferences expressed by students are much of the same as those expressed by employers. Students see themselves as customers of the business school and expect a return from their investment (Trank & Rynes, 2003).

Accreditation body as a stakeholder. The third stakeholder discussed by Trank and Rynes (2003) was accrediting organizations, which serve to maintain continuity within business schools. The premier accrediting agency is the Association to Advance Collegiate Schools of Business (AACSB). Many people see the AACSB in the same light as professional accrediting agencies such as in the disciplines of law and medicine (Trank & Rynes, 2003). The

distinguishing factor that separates the AACSB from the other professional accrediting agencies is the lack of professional standards (Trank & Rynes, 2003). Trank and Rynes continued,

> Equally troubling, we think, is the fact that the emphasis on common standards and performance criteria has created an environment in which curriculum and standards are continually negotiable, leaving schools without a professionally sanctioned reference point for resisting market like pressures. (p. 191)

Mangan (2002) stated that the AACSB existed to further the discipline of business education through a set of common courses and learning outcomes reflecting the quality and consistency of business education among all member schools. Through the leverage of certification, this organization sought to provide an overarching statement to business schools, the professional business community, and society with a mechanism to respond to the needs of the constituents served by business programs (Mangan, 2002).

Mangan (2002) continued by saying that the AACSB was effecting standards that were much more flexible while pursuing a high level of quality. The AACSB emphasized an inclusive strategy with its member schools in an effort to increase the membership base. The interest of this accrediting body was to expand its membership base, rather than protecting its standards (Trank & Rynes, 2003). The AACSB does not currently mandate a set of standardized outcomes or professional body of knowledge.

Media as a stakeholder. The fourth stakeholder identified by Trank and Rynes (2003) was the role of media, more specifically, media rankings. A coveted distinction in any business school is its ranking among peers. Rankings have taken many forms with any given media outlet designing and executing a business school ranking for publication (Trank & Rynes, 2003). Business schools have leveraged the outcome of the rankings as a recruitment tool. There has

been no standard ranking criteria or ranking model format for the comparison of business schools (Trank and Reynes, 2003).

Gioia and Corley (2002) suggested that business school rankings were counterproductive in that business schools engaged in practices designed to increase their standings in the rankings. There is a natural assumption that rankings equate to definitive quality. It is this nature of the rankings that threatens the business school in the way that it reaches its constituents and serves the community. Gioia and Corley further claimed that the rankings have been an undermining force in the professionalism of business school and in defining the best use of resources. Trank and Rynes (2003) asserted that rankings, in many cases, are designed and delivered and reported by those who are not in the business education community. It becomes a vehicle to sell media (magazines, newspapers, etc.) and for business schools to use as a tool for recruiting.

Reingold (1998) concurred with those who are critical of business school rankings. Most casual observers feel that rankings are the true validation of the quality of a business school and its curriculum. The problem with that thought is that there have been no consistent criteria with rankings and no recognized body as a ranking authority (Reingold, 1998). Typically, it is a media source that constructs and publishes rankings with criteria of their own choosing. Reingold further noted that B Schools are quick to upgrade facilities and to populate faculty with highly credited individuals. Reingold further stated, "Schools often turn on a dime to upgrade facilities or replace poor teachers" (p. 89). B Schools typically load up on the criteria of a given ranking and communicate those attributes to the ranking agency. Very little is given to the effectiveness of teaching and the amount of learning within the business schools and yet media rankings have tended to be a significant driver to business schools' operations, including the curriculum (Trank & Rynes, 2003).

The Effect of Stakeholders on the Business School

Trank and Rynes (2003) suggested that the consequence to business schools is seen in the influence of these external factors. To meet these stakeholders, business schools have responded with easier coursework, grade inflation, and less emphasis on the undergraduate programs. Additionally, Trank and Rynes (2003) claimed that business schools use more adjuncts who are practically trained and not academically trained, engage in reactive decision-making, and subscribe to a lessened ethics focus.

The Academic and the Practitioner

Clinebell and Clinebell (2008) stated, "Business schools are walking a tightrope between the academic side of business and the practitioner side" (p. 99). Years of struggles to find the identity between the practical and the theoretical have continued to plague the understanding of business schools in today's academic community. Trank and Rynes (2003) noted that the business schools in today's institutions of higher education are at a crossroads. Schools are struggling with the concept of vocation and profession. Relevancy becomes the important station in business school education today. Does the B-school focus its efforts upon teaching skill on supporting a holistic contribution to society (Trank & Rynes, 2003)?

Trank and Rynes (2003) felt that at issue was the use of qualified faculty guiding and directing the classroom environment. On one hand resides the practitioner. He or she is the veteran of the trenches, replete with war stories of the live bullets screaming overhead. The students are engaged with the been-there/done-that view of the world. They are taught to assess the environment and to react with strategic enthusiasm to accomplish the honorable goals of business. The classroom comes alive with the everyday opportunities, challenges, and consequences of decision-making in today's environment (Clinebell & Clinebell, 2008).

DeAngelo, DeAngelo, and Zimmerman (2005) stated that students were taught to structure their thinking as influenced by using a conceptual foundation.

Academic Integrity of the Academic and the Practitioner

Others in the academic community feared that the use of the practitioner would dilute the academic integrity of the business school and therefore challenge the academic core (Merritt, 2004). The honor and integrity of higher education goes beyond simple practice. This is the arena in which intellectual inquiry is honored and discussion, discovery, and conclusion thrive. The practitioner represents a challenge, in part, to the nature of higher education (Merritt, 2004).

The academic/practitioner debate exists and continues in business schools. On one hand academic recognition is enhanced with Ph.D. professors engaged in active research and publication (Clinebell & Clinebell, 2008). In contrast, many business school professors come from the practitioner ranks, which feature real-world application to theory and concepts. Clinebell and Clinebell (2008) expressed the need to find a common understanding between the two ideologies. They suggested that business education resides in a unique place in academia. It seeks to balance the traditional academic perspective with the professional perspective. It finds itself in a difficult place as it tries to align itself with disciplines such as law and medicine (Clinebell & Clinebell, 2008). It is difficult to make that link to law and medicine without definable and firm professional standards. The true nature of business education is a hybrid. It vacillates between the clinical and the practical (Clinebell & Clinebell, 2008).

The Foundation of the Problems with Today's B-school

Kieser and Leiner (2009) stated that in the late 2000s, two systems operated in business schools of the day. Those systems were identified as those systems for the management researchers and the systems business practitioners. They operated in distinct separation from

each other. They were firm in their beliefs that there existed a commonality within the systems of research and the systems of practice. That commonality was parlayed in the notion that business practice must be verified and deemed reliable through research (Kieser & Leiner, 2009).

In 1996, the American Assembly of Collegiate Schools of Business issued a report from the AACSB Faculty Leadership Task Force that identified four underlying problems facing B Schools and their faculty today. These are (a) a lack of real-world business contact, (b) the development of new technology, (c) changes in faculty demographics, and (d) a reluctance of business schools and faculty to change (AACSB, 1996).

The Future of the Business School

In order to understand the future of the B-school model (curriculum, delivery, and intended outcomes), one must be reminded of the past. As stated several times in the work, the era of business school education began with the Wharton gift to the University of Pennsylvania in 1881 (Cheit, 1985). That act set off a decades-long foray into the presence of business education as an academic discipline. The early days were more of an experiment than an academic model. With claims of an orientation of vocation and triviality, the institutions of higher education forged ahead promoting business education as an academic discipline (Xie & Steiner, 2013). The first master's program in business began at the Tuck School of Business at Dartmoth University in 1900 (Friga, Bettis, & Sullivan, 2003). The MBA curriculum followed several identifiable eras. Friga et al. (2003) stated that the early development was characterized as highly business-practice relevant with professors and instructors coming from the corporate ranks. This was a necessity since the early days of business of business education had few advanced degree business-specific professors. Most of the instructors came from the areas of

economics and commerce. Friga et al. (2003) believed that the undergraduate development followed the same era pattern as the development of the master's programs.

The 1950s ushered in the period described by Friga et al. (2003) as the faculty-based era. A focused emphasis on research and publication marked the decades to follow. Schools of business were seeking academic validation through the customary gateway of traditional academic pursuits. Business schools were criticized from both sides of the development spectrum; the corporate-based was too vocational, and the faculty-based was too academic (Xie & Steiner, 2013). Friga et al. (2003) saw the future characterized as the student-based era. This would be a time when schools of business emphasize immediate and relevant theory content in a cost effective and expedient manner.

21st Century Challenges and Responses

Management education continues to operate in a dynamic environment. Business schools are now faced with serious challenges of the 21st century setting. Two new delivery methods appeared and gained a foothold in the business education arena (Friga et al., 2003). The first are the for-profit institutions, which appeal to the marketplace with the intrigue of earning a business degree quickly and conveniently using the distance-learning model. Two of the largest institutions with strong footholds in the marketplace have been the University of Phoenix and Kaplan University (Friga et al., 2003).

The second delivery mechanism that is gaining popularity is the corporate university. Long operating outside of the high visibility landscape of university sponsored schools of education, the corporate university is serving a distinct and defined population while gaining popularity in the marketplace (Meister, 2006). The distinction of the corporate university is that it provides a curriculum that directly identifies with its sponsor. The students of the corporate

university have an advantage for career development within the sponsoring organization. Firms such as McDonalds, Motorola, and Disney are at the forefront of the corporate education movement. At the present more than 4,200 corporate schools of business operate throughout the world (Meister, 2006). A third dynamic, albeit small in comparison the entire marketplace, are independent consulting firms who perform both internal and external business education services (Moore, 1997).

The traditional B-school, which has a history and practice that has shaped its very existence, has been challenged to attract and retain students (Starkey & Tempest, 2005). With other models as an option to the decades-old delivery of business school education, the B-school of higher education must respond and be relevant in today's learning environment. Schools of business "can no longer make uncontested claim to knowledge supremacy" (Starkey & Tempest, 2005, p. 71). Grey (2004) supported this feeling by stating that it was unlikely that business schools would survive in their current model unless they produce and deliver a product that is valued by students and businesses.

The challenge of business schools is that of alignment and presentation in the university structure (Starkey et al., 2004). This defines the purpose of the business school and the value it provided to students, businesses, and society in general. According to Nowotny, Scott, and Gibbons (2001), the business school must transform its place into a new agora, an interrelationship among science and politics in society.

In the contemporary sense, agora represents the diversity as practiced by individuals and groups who merge the concept of citizen and consumer in which the rules of order are set by the markets and the politics characterized by the application of knowledge and the implications therein (Nowotny et al., 2001). The business school becomes, in effect, a knowledge carrier. In

this role, it (the B-school) uses this advent of knowledge space where different disciplines represented by different stakeholders use this as a forum to interact and share with each other. In this way the honor of knowledge in the advancement of thought and contemplation reigns supreme (Nowotny et al., 2001).

The role of the business school contributes to the development of an educated society by reaching and supporting an educated people. The vehicle is the college or university. Nowotny et al. (2001) stated, "The University remains the most important site where knowledge gains can be consolidated, stabilized and. . .institutionalized but it has to continually justify its role and re-create ways of fulfilling it appropriate to our uncertain times" (pp. 80-81, 94). The solution comes with business school faculties and practitioners operating with a singular purpose and defined outcomes to meet the challenges and demands of the present and the future (Starkey et al., 2004).

Design Proposals and Model Changes

This situation begs the question, "OK, here we are. So where does this path lead us (B Schools)?" There have been many designs and proposed changes in the B-school model over the years. Xie and Steiner (2013) saw that the design of the B-school in the future must address three issues of the current delivery model (a) business education is too function oriented, (b) there has been too much emphasis of management as a science, and (c) business programs have touted their successes in the amount of economic and financial success come to its graduates. Trank and Rynes (2003) suggested, "Business schools themselves have become enablers of de-professionalization or, in some instances, purposeful institutional entrepreneurs who willingly participate in the oversimplification of business knowledge for profit" (p. 199). Students are

keen evaluators of the relevant. They are disposed to select coursework that they deem as relevant and can reflect their command of the topics most important to businesses today.

The Xie and Steiner Model

Throughout recent years alternatives to the traditional model surfaced in business education. The submissions of improvements coagulated into two separate camps. They are programs teaching methodology and course offerings (grouped as one) and improvements in pedagogy. Xie and Steiner (2013) departed from the traditional model through an offering of four proposals. Xie and Steiner (2013) stated, "We discuss four (4) radical proposals that represent a departure from the traditional management education: student-as-partner, student-as-client, the professional model, and critical management education" (p. 3).

Student as partner. The first instance, student-as-partner, Xie and Steiner (2013) referenced Ferris (2002) who suggested that professors are the senior partners and that students are junior partners. This model was effective only with the understanding and practice of collaboration and mentorship. A re-definition of the professor-student relationship must be articulated and understood. This resulted in an attitude of facilitation and enablement among the parties of this relationship (Xie & Steiner, 2013). They pointed to Ferris (2002) who felt that this model supported the relationships which existed between the student and the professor.

Student as client. The Xie and Steiner education model quartet continued with the student-as-client pedagogy. Armstrong (2003) proposed this model as an alternative to the traditional approach. Armstrong began with the notion that three significant issues are at play with the professor-student relationship. They are (a) the undergraduate and MBA classes are many times larger in student numbers, (b) the students have a modest development of educational maturity, and (c) there may be limited opportunity for professor-student interactions

(Armstrong, 2003). The Armstrong model, supported by Xie and Steiner, was based on the fact that it is incumbent upon the clients (students) to seek out support and clarification from the leading professional (professor). The professor provides counsel and direction with the onus residing upon the student to perform (Xie & Steiner, 2013).

The professional model. The professional model is included for consideration. This model supports the study of business to be a profession in the same light as disciplines such as medicine and law (Bennis & O'Toole, 2005; Khurana & Nohria, 2008). This model was born of the criticism leveled against schools of business for the failure of business programs to develop an ethical conscience within the student. High profile illustrations have come to the general population through the mainstream media. It was the opinion of Xie and Steiner (2013), Bennis and O'Toole (2005), and others that management should subscribe to codes of conduct and that consequence should be enforced for professional malfeasance. It becomes the obligation of the B-school to introduce and instill ethical behavior of students.

The critical management education model. Xie and Steiner (2013) concluded their thoughts with the critical management education (CME) model. This is a complex model that is commonly practiced in Europe. This model is "a critical approach to management education [that] draws upon students' experience, work or non-work related, and problematizes rather than simply validates management theories, assumptions and taken-for-granted models" (Xie & Steiner, 2013, p. 4). CME is constituted in such a manner that students are exposed to the social and humanistic that defines contemporary management (Xie & Steiner, 2013). Grey (2004) identified values and context as two elements that the CME supports. Management is a discipline that is steeped in values and therefore mandates that values are woven into the fabric of the curriculum.

The Drivers for Change

The critics of business schools beg for an alternative. Starkey et al. (2004) stated that the first, and perhaps most profound, alternative exists in the notion challenging the very presence of the business school in higher education. There are those who feel that since no professional business standards exist, the business school education can be satisfied through general education courses offered at most institutions of higher education (Starkey et al., 2004). Courses such as logic, philosophy, sociology, the humanities along with writing and communication can be seen as an acceptable basis for a business career since business is a matter of interpersonal relationships and communication (Starkey et al., 2004).

The obvious and easy alternative is simply to do nothing. This is not necessarily a bad scenario since business and academia have a historical presence and can maintain the current configuration without change. The driver of the current model is a combination of academics in practice with the greater emphasis on the academic influence of research and publication (Starkey et al., 2004). The movement to seek alternatives to the current model was based upon the thoughts of some observers such as Starkey et al. (2004) who suggested, "The business school ideal is increasingly seen as educationally, culturally, and ethically bankrupt. We see a sharp erosion of its basis for competitive advantage as other providers enter the education arena" (p. 1524). The education landscape in business is changing with the advent of corporate universities and management consultants. Critics pointed to a sharp decrease in demand of business education in higher education (Starkey et al., 2004).

Pfeffer and Fong (2004) were among those who believed that business schools play a significant role in the pursuit of knowledge for the sake of intellectual inquiry. They suggested that the business school of the future will rediscover its base and reflect the academic influences

of colleges and universities. Individuals and societies will benefit from the relevance and the practical application of the knowledge that comes from the business school in the future (Pfeffer & Fong, 2004). In order to achieve this station, business must view the environment from a different lens of research and teaching (Hatchuel & Glise, 2004; Starkey & Tempest, 2004).

Summary

Business school education in colleges and universities began in 1881 at the University of Pennsylvania (Cheit, 1985). Business education has struggled with its place as an accepted member of the academic community. In the 1800s and early 1900s, business education struggled to establish and maintain credibility among its academic peers as a discipline of academic pedigree (Cheit, 1985). At issue was the continuing discussion of whether business education was a vocation or an academic discipline. In its response to the mounting academic pressures, business schools followed the traditional academic model of research and publication (Bennis & O'Toole, 2005).

This attitude of research and publication helped to endear itself to the mainstream academic community. However, in its academic endeavors it began to slowly drift from the practical application of the business discipline (Cheit, 1985). Employers in the business community sought relevance in the curriculum and expected graduates to be workforce ready.

The desire to serve the two masters of academia and practice created a dilemma for business schools throughout colleges and universities. Business schools felt that they were caught in a zero-sum game; that is to pursue one position seemed to compromise the other (Behrman & Levin, 1984). Business schools struggled to satisfy and excel in both areas. Many curricular models were conceived, proposed, and executed in the hopes of achieving the ultimate end (Rousseau, 2012).

Business schools found that the academic environment is slow to change and reluctant to accept new thoughts and ideas (Rousseau, 2012). In today's environment, strong messages are being sent by the business community. Their mantra calls to colleges and universities to provide a product (graduates) that have the academic skills and discipline mastery along with the 21st century skills needed in today's world. The 21st century skills include, but are not limited to teamwork and communications (Burkhardt et al., 2003). A new model so conceived would be embraced by both the academic and the practical communities (Rousseau, 2012).

CHAPTER 3

RESEARCH METHODOLOGY

Chapter 3 presents the study's research design. The chapter describes not only what I did but also why I chose a particular path. In addition, the reader will find that Chapter 3 is a presentation of procedures and methods for responding to the research questions.

Purpose of the Study

The purpose of this study was to observe students' perception of communication and teamwork following the first semester of business studies at ICC. This study compared the perceptions of ICC students with MTCC students.

The ICC curriculum in the school of business was an innovative and progressive business program that integrated 21st century skill development. The expectation was that such a program produced graduates who used communication and teamwork as essential ingredients of their skill development. Furthermore, those who designed and who now implement the curriculum hope that the consequential result will be that businesses find a more complete product of the B-School ready to contribute, and that these new workers require a lower startup cost than previously experienced.

Statement and Justification of the Method Chosen

I chose a quantitative approach to this study, based upon four characteristics of quantitative rationale. In the first instance, this research subscribed to the concept of "narrow-angle lens." The subject matter of this survey could be limited to a modest number of factors. This study lent itself to hold factors constant that were beyond the scope of this observation.

Another supporting factor was that this study expressed the observations in a numeric format. Rating scales and comments were expressed on a numeric continuum; although, not integral, the data could be captured, gathered into clusters, and analyzed. Continued support for the quantitative approach was that I practice objectivity. In this way other observers were able to capture the same type of data in the same type of way. This lent to the likelihood for replication and consistency of results.

The quantitative approach to data analysis aligned very well with the type of questions and the format of the answers of the Teamwork Competency Test (Aguado, Ramon, Sanchez-Manzanares, Salas, 2014). Participants were asked to respond on a 10-choice scale.

The type of evaluation chosen was a quasi-experimental study. The distinguishing factor of this type of study was that it lacked a component or components of a true experiment. A true experimental design would have included each of the following (a) pre-test/post-test design, (b) groups identified as treatment and control, and (c) study participants randomly assigned (Abbott, 2011). In this case, randomness cannot be assumed as I identified two intact groups as ICC and MTCC.

Restatement of Research Questions

The two overarching questions in this research study were (a) To what extent do students in the ICC School of Business change their perception of competence in teamwork and

communication? and (b) To what extent do students in the MTCC change their perception of competence in teamwork and communication? Sub-questions to the above were

1. At the ICC what are students' perceptions of their competence in teamwork?
2. At the ICC what are students' perceptions of their competence in communication?
3. At the MTCC what are students' perceptions of their competence in teamwork?
4. At the MTCC what are students' perceptions of their competence in communication?
5. After one semester, how do the changes in perception of teamwork competence at ICC compare to those at MTCC?
6. After one semester, how do the changes in perception of communication competence at ICC compare to those at MTCC?

Null Hypotheses

$H_0$1. There is no difference in the pretest and posttest regarding the gains of competence in teamwork for students in the ICC School of Business during the first semester of business studies and those in the MTCC School of Business.

$H_0$2. There is no difference in the pretest and posttest regarding the gains of competence in communication for students in the MTCC School of Business during the first semester of business studies and those in the MTCC School of Business.

Population and Sample

The intended population of the study participants included all students who were enrolled in the introductory business course at ICC and all students who were enrolled for the introductory business course at MTCC. The members of both groups were incoming students to the study of business at ICC and MTCC. They were typically first-semester freshmen. Those who were not first-semester freshmen included transfer students or others who changed their

majors to business. The integrity of the study was not affected by the few students who were not first-semester freshmen.

The sample for this study was derived from the above population and included all who desired to participate in the study. Participation in this study was voluntary. The study subscribed to the IRB requirements at Indiana State University, ICC, and MTCC.

Recruitment

This study required two recruiting campaigns in order to have the necessary participants. The strategy of the ICC campaign was to invite students from the introductory business class in the school of business. I consulted with the dean and assistant dean of the school of business at ICC along with the instructors of the introductory course. A formal request was made to ask for time to conduct an early-semester survey and a late-semester survey.

A similar recruiting model was initiated with MTCC. The contact person with MTCC was the director of undergraduate studies/professor of marketing. The director and I exchanged e-mail communications on or about July 29, 2014. The nature of that e-mail was to confirm our relationship and look forward to contact in spring, 2015 to prepare for the early-semester survey in August.

A letter of introduction and an informed consent form were available to all students who took part in this study. I consulted with the dean/instructor of the classes at each institution to determine the best and most efficient way of actually having conversations with students without their instructors or deans present. In this way students could make a decision to participate or not participate in the study and remain free from unintended coercion. All efforts were made to sufficiently provide the subjects with all pertinent information of the study in a way that allowed for individual decisions to participate.

These documents shared all relevant information to the participants of the study. See Appendix A for the detailed information on the Informed Consent Form.

Instrumentation

The primary research instrument was a validated study entitled *Teamwork Competency Test (TWCT): a Step Forward on Measuring Teamwork Competencies* (Aguado et al., 2014). The TWCT was an improvement of an instrument titled *The Teamwork (KSA) Test*, commonly known as the TWKSAT. The TWKSAT was developed by Stevens and Campion (1994, 1999) and was regarded as a standard instrument used to measure team member competency. Aguado et al. (2014) argued that the TWKSAT contained reliability problems. The TWCT improved the TWKSAT with stronger content validity, reliability, and dimensional test structure. The research comparing TWCT and TWKSAT was shared by Aguado et al. (2014).

Aguado et al. (2014) conducted three studies to address reliability, content validity, and dimensionality. The first study examined the TWKSAT and featured content and dimensionality. The researchers created a descriptive statistical analysis, which featured each item in terms of mean, standard deviation, discrimination index, skewness, and kurtosis in addition to Cronbach's alpha. Aguado et al. enlisted the services of three experts to examine the validity of the test content. Mplus analysis was used to determine dimensionality of the TWKSAT.

A second study was conducted by the Aguado et al. (2014) research team to test the TWCT. This test included 36 items related to teamwork and communication. This second study was applied to a sample of university students (n = 120) with the intent of testing for reliability, content validity, and dimensionality. The TWCT addressed all aspects of the Stevens & Campion (1994) model and reflected a more reliable and greater goodness of fit estimator.

Aguado et al. (2014) performed a third study with the objective "1) to obtain initial evidence for the convergent validity of the new measure of teamwork competency developed in study two, and 2) to compare the new measure with the original test proposed by Stevens and Campion (1999)" (Aguado et al., 2014, p. 21). The results of this study showed that the competencies of the TWCT were positively correlated. The results of third study provided favorable evidence for convergent validity of the TWCT. As a final point, the predictive capacity of the TWSAT versus TWCT showed that the TWCT was a better predictor of teamwork (self-assessment).

The study instrument used in this study was a modified version of the TWCT. The changes, with permission from Dr. Aguado (see Appendix B), were clarity edits for the English-speaking respondents as the TWCT was originally written in Spanish. The response scale was changed from 1 to 4 to 0 to 10. The change in the response scale (with permission from Dr. Aguado) allowed for a greater review and analysis of the responses as compared to a 0-4 scale. There were 44 questions on the survey, which included 30 teamwork questions and 14 communication questions. Appendix C contains the original questions and the edited questions that were administered in this study.

The test observations were also used to deduce the interpretations to the larger population of schools of business. This addressed the larger question, "What's next for the B Schools in general?" I applied inferential analysis to address the hypotheses and express reasonable conclusions.

Survey Validity

The American Educational Research Association and the National Council on Measurement in Education (1999) defined validity as "the degree to which evidence and theory

support the interpretation of test scores entailed by proposed use of tests" (p. 9). The key to quantitative validity lies in the interpretation of the data, not simply an observation of raw numbers. Validity can be seen as the statement, "Does it really say what you think it says?" Three categories of evidence are suggested by the *Standards for Educational and Psychological Testing*. Those standards were evidenced-based on the content of a question, evidence-based on the relationship to a particular criterion, and validity-based on a particular construct.

The testing instrument used in this study was the TWCT (Aguado et al., 2014). The authors of this test discovered weaknesses in an instrument developed in 1999 by Stevens and Campion called The Teamwork Knowledge, Skill, Ability Test (TWKSAT). Aguado et al. (2014) remodeled the TWKSAT, which became the TWCT.

Test Construct

The essence of the test construct was seen in the strength of the link between the test questions and that which it is intended to measure. Evidence must exist that the test addresses the appropriate range of skills and knowledge represented by the domain it addresses. Care was taken to see that the relationship is valid and appropriate regarding the test questions and the intent of observation. A related term in the lexicon of validity measures is *face validity*. This term is used in the same context of test construct (Ary, Jacobs, & Sorensen, 2010).

Criterion-Related Validity

The instrument used in the study met the criteria of content-related validity. This validity measure referred to the relationship of the test scores to outcome criteria. This validation technique emphasized the criterion because performance was inferred by the test scores. There were two types of criterion-related validity. The first type was concurrent validity, and the second type was predictive validity. The difference between these validity types was seen in the

time periods involved. Concurrent validity showed the relationship between scores and measures obtained at the same time period. The predictive validity emphasized the future times at which the relationship between criterion scores and instruments scores were available (Ary et al., 2006).

Construct-Related Evidence

This type of validity focused upon a psychological contract. It was meant to illustrate how the psychological construct measured against the test scores. In this context, the construct-related evidence featured psychological qualities such as critical thinking, motivation, and intelligence. It was important that an instrument provide evidence of the relationship between the construct and the scores (Ary et al., 2006).

Survey Reliability

The survey instrument used in this study was tested to determine its reliability. Reliability, as addressed by Ary et al. (2006) referred to the degree in which the same test would give the same results. Reliability is affected by two kinds of errors: systematic errors of measurement and random errors of measurement. The random error is that which appears beyond the consequence of design. It was not possible to assign a cause to this error, and it occurred in a most unpredictable manner. The systematic errors manifest themselves in a more predictable way. There was a causal link between a particular condition and the result, as shown on the analysis of the test. Systematic errors can and must be addressed to be reduced and otherwise nullified.

Ary et al. (2006) identified three sources of random errors. They were (a) the human nature of random errors such as motivation, interests, anxiety, etc., (b) error introduced through administration of the test, and (c) a source of error may come from the instrument itself.

Study Variables

A variable is any event, action, or status, which can be measured quantitatively or observed qualitatively. A variable is capable of comparison, which may reveal patterns and occurrences. The first variable to be discussed was the independent variable. The independent variable is an event or condition that provides separation between two or more groups. Three main classifiers existed with respect to an independent variable. They were (a) the differentiators between two or more groups, (b) the condition that happens or exists before changes are introduced, and (c) the cause of the change among two or more groups. For this study, the independent variable was the classroom experience/curriculum for the ICC student compared to the MTCC student for the introductory business course for each of the two schools. It was the distinctive factor between the two institutions of higher education.

The dependent variables were related to the independent variables as outcomes of the independent variable(s). In this case dependent variables were the scores on the TWCT, which identified students' perception of competence in teamwork and communication.

Data Collection Process

The data collection process commenced at the time that the instrument was delivered to the participants. Students of ICC and MTCC received the instrument during a regularly scheduled class period. No attempt was made to include students who were not in class at the time of the delivery of this instrument. I was in attendance and provided an introduction and was the source of delivery and collection of the questionnaires. The instructor for the subject classes was allowed to be excused, and I was the administrator of the instrument.

The survey instrument consisted of 44 questions, which addressed communication and teamwork. No time limit was given; however, it was expected that the entire process from

introduction to data collection took 15 minutes or less. It was anticipated that the participants provided their individual responses on paper, and I transferred the paper data to electronic data for quantitative analysis.

This population was easy to define and to reach. In both instances, university professors allowed the survey to be taken during a regular class time. Upon completion of the exercise, I gathered the data and secured it in an envelope to be opened at the time of review and analysis. Since this instrument was issued as a pretest and a posttest, the same processes was observed at the end of the semester as it was at the beginning of the semester. All data were locked and secured on-site at Marian University.

Data Analysis

The data, when gathered, represented a matched set of a pretest and posttest instruments. The pre and posttest questions were identical. The data were matched with an identifier, which only provided the means to bring the pretest and posttest information of each participant. The students were asked to provide the last four digits of their student identification number. They were asked to use the same four-digit number on the post test. I did not know names of the respondents.

This survey instrument was a collection of 44 questions that addressed teamwork and communication. Each question had a response scale of 1 to 10, 1 = *never* and 10 = *always*. The 1-10 scale is believed to negate significant differences between numeric choices and create a more consistent scaling breadth.

The driver of the data analysis was quasi-experimental design. This approach works best in an environment in which conditions of the study cannot be controlled by the researcher (Abbott, 2011). In this instance, two groups were assembled which were similar but not

identical. The subjects of this study share similar characteristics but do not have an equal bond. Complete randomness cannot be assured as the subjects have gathered to engage in a common experience of an introductory business course.

Descriptive and inferential analyses were used in the study. The data analysis was not limited to the discussion herein as many and varied statistical applications were pursued. Those applications which were deemed most applicable to this study were used and provided the basis for the reporting.

Descriptive Analysis

The descriptive analysis was used to identify patterns and to understand better the data as it was presented. The data, gathered from the test subjects, was in a numeric format. The data was represented in a way to identify patterns that may exist both numerically and visually through graphs and charts. The first of these descriptive tests included (a) mean, or arithmetic average, (b) median, middle scores of an array of data, (c) mode, scores appearing most frequently in an array of data, and (d) the standard deviation of the data.

These tests are considered to be observations of central tendency. Additional descriptive tests included distributions as seen in the normal distribution, skewness, kurtosis, and frequencies of responses. The skewness relates to the balance or relation to the center of the data. Kurtosis measures the degree to which the data was peaked or flattened (Abbott, 2011). The intent of the data analysis at this point was simply to describe and observe. I painted the canvas in such a way that a picture in numbers began to take form and shape. Data analysis looked at the responses as a whole and within the data subcategories of teamwork and communication competency.

Inferential Analysis

The inferential analysis presentation contained a review and commentary on repeated measures mixed analysis of variance (also referred to as split-plot ANOVA) and paired sample *t* tests. The repeated measures ANOVA is particularly useful in working with between-subjects and within-subjects data.

Between-subjects analysis is designed to compare different groups of individuals as a way to determine the effectiveness of a given treatment (Ary et al., 2006). Each student group was given the TWCT instrument at the beginning of the semester and once again at the end of the semester. The dependent variables, mean scores, were compared between groups in an attempt to determine the consequence of the independent variable, curriculum.

Additionally, a within-subjects analysis examined tests of the same subjects at different times confined within the construct of a given group (Ary et al., 2006). There were two time periods featured, one at the beginning of the semester referred to as the pretest and the other at the end of the semester referred to as the posttest. Each individual was observed to determine if there was change in the dependent variable, scores.

The repeated measures ANOVA was used to examine teamwork and communication mean statistics between groups. The data subscribed to the five tests for repeated measures ANOVA. The first test required the data to be measured on a continuous variable, which was represented by a scale of 0-10. The second qualifier found the independent variable to consist of at least two categorical related groups, which was seen as pretest and posttest. The third test requires that there be no significant outliers. The fourth criteria required that the data groups are normally distributed (see appendices F and G). The final test was that the data achieved

sphericity, in which the observed covariance matrices of the dependent variables were equal across groups. The data satisfied sphericity by the Box's test.

The data was reviewed in terms of: (1) within subjects pre-post all responses, (2) within subjects pre-post by school, and (3) the between subjects effect. The statistics reported the *F* value, significance, and the effect size. The *F* ratio computation is a statistical technique used to accept or reject a null hypothesis based upon a tolerance of risk. The tolerance for risk used in this exercise was expressed at a 5%, or 1 chance in 20 that the result will cause a Type I error (rejecting the null but it is actually true) or Type II error (accepting the null but it is actually false). The *F* value, or *F* statistic, used the sum of squares applied to the means of within-subjects and between-subjects data. The result was a value which is compared to the critical value determined in an *F* table in based upon degrees of freedom of the data. That critical value, when compared to the *F* statistic, determines whether the data fell within the defined risk threshold (Ary et al., 2006).

Similar in nature to the F ratio is the significance, or *p* value. This value establishes a boundary of the risk one is willing to take that a given change is caused by chance. Typically the *p* value is applied to a null hypothesis which is a statement supporting the status quo (nothing changes). A low *p* value rejects the null hypothesis and a high p value accepts the null hypothesis. The researcher establishes the level of tolerance for error. As noted above, risk was established in this exercise at 5%, or 1 in 20 times a Type I or Type II error will occur. If a researcher does not reject the null hypothesis, the condition could have occurred due to chance (Abbott, 2011).

The *F* statistic and the p value help to determine if a condition is statistically significant but it does not necessarily mean that it is of practical significance. The effect size is used to

address how meaningful or important the difference is or how large the effect of one variable is on the other. There are several effect techniques to use in analyzing data. This study utilized Cohen's *d*. In 1988 Jacob Cohen published conventions for interpreting the difference of two means by the percent of average standard deviations. Known as Cohen's *d*, the researcher can appreciate the power of the change by measuring the non-overlap of the bell curve by the treatment group and the control group (Rockinson-Szapkiw, 2013). This is done by subtracting the means and dividing that answer by the average standard deviation of the two treatments. The Cohen conventions identify a small effect as .2, a medium effect as .5, and a large effect as any value greater than .8 (Cohen, 1988). This study subscribed to those conventions.

Finally, a profile plot illustrated the changes in mean scores along with the rate of change as represented by a connecting line. The teamwork data were presented first followed by the communication data.

The inferential analysis continued with a review of paired sample *t* tests. The purpose of this statistical analysis was to determine if the gains of perceived competence in teamwork and communication within schools were statistically significant. The teamwork and communication data were treated in the same manner. The first observation was total data analysis by group (school). A table of statistics included a change of the mean, standard deviation, *t* value, *p* value, and effect size reported as eta squared. A comparison of these indicators contributed to the evaluation of the statistical significance of teamwork and communication within each school.

The paired sample observation continued with an analysis of individual questions by school. Cluster groups were identified to determine if there were statistically significant relationships evident as a subsection of teamwork and communication. This is acknowledged

and analyzed in Chapter 4. Continued comments of findings and the implication of the cluster analysis are included Chapter 5.

A final statistical commentary is given to effect size. Effect size was originated by Smith and Glass (1977) to give a refinement to the concept of not only the direction of means change but also of the strength of that change. In this study the effect size was used to determine the degree of magnitude that the curriculum had upon the dependent variable, scores. Effect size quantifies the difference between two groups (Ary et al., 2006). This is of particular value when looking at the effect of an intervention when comparing two groups (Coe, 2002). In this way the research data were quantified to the size, or breadth, of the data between ICC and MTCC.

Summary

Chapter 3 was designed to give the reader a sense of research design to meet the intent and purpose of this document. This explanation was given in a sense of logic with supporting rationale. It described not only what was done, but also why this particular path was selected. In addition, the reader found that Chapter 3 presented the procedures and methods for responding to the research questions.

CHAPTER 4

DATA ANALYSIS

The purpose of this quantitative study was to investigate whether the perception of competence in teamwork and communication changes over time with students at ICC and whether the perception of competence in teamwork and communication changes with students at MTCC. Furthermore, this research study addressed the perceptions of competence in communication and teamwork at ICC compared to the perceptions of competence in communication and teamwork at MTCC.

Statistical analyses of the data included a review of the descriptives, mixed design (split plot) ANOVA, and paired sample *t* tests. The analyses were utilized to respond to the following sub-questions:

1. At the ICC, what are students' perceptions of their competence in teamwork?
2. At the ICC, what are students' perceptions of their competence in communication?
3. At the MTCC, what are students' perceptions of their competence in teamwork?
4. At the MTCC, what are students' perceptions of their competence in communication?
5. After one semester, how do the changes in perception of teamwork competence at ICC compare to those at MTCC?
6. After one semester, how do the changes in perception of communication competence at ICC compare to those at MTCC?

Demographic Data and Survey Parameters

This study was conducted by surveying individuals who were currently enrolled in introductory business classes at ICC and MTCC. Most students in this group were first-semester freshman enrolled in their first college business class. Student ages ranged from 18 years to 20 years. Those students enrolled in the colleges selected for this study were very similar in background. The institutions included in this study were small college settings with total enrollment fewer than 3,000 students. Both institutions were faith-based colleges located in the Midwest. Additionally, ICC and MTCC were grounded in the liberal arts tradition with a course of study in business as a professional path option for the students. The schools had both commuter and residential students.

The population of this study included 69 students from MTCC and 67 students from ICC. The study included two time periods of data collection. The first survey was administered at the beginning of the fall, 2015 semester in late August/early September; the final survey was conducted at the end of the semester in December. The replies were matched to ensure that each student of this study had both a pretest and posttest set of responses. ICC had a total of 77 responses submitted during the pretest and 69 responses submitted for the posttest. MTCC had a total of 82 responses in the pretest and 91 responses in the posttest. In all, MTCC had 69 matched replies, and the ICC group totaled 67. Only matched replies were included in this study. Responses that could not be matched were eliminated. The surveys were administered in class time periods made available by professors in the respective colleges.

The 30 survey statements for teamwork were summed to a total score for each student. The lowest possible score for a student was 0, and the highest score for a student was 300. The students replied to the communication statements on a response scale of 0 to 10. The lowest

possible score for a student was 0, and the highest score for a student was 140. Appendix D delineates the teamwork statements and the communication statements.

The instrument was disseminated, collected, and analyzed in the fall academic semester of 2015. All data gathering sessions were at the campus locations of ICC and MTCC. The term pretest denotes the August/September collection period and the term posttest denotes the December collection period. The statistical analysis began upon the receipt of the completed instruments from both institutions.

Descriptive Data

ICC Teamwork Descriptives

The ICC data included 67 pretest/posttest matched responses. The total teamwork scores were out of a maximum of 300 possible points. Table 1 summarizes the ICC teamwork responses.

Table 1

Descriptive Statistics for ICC Teamwork

Statistic	Pretest	Posttest
Mean (*M*)	197.0	211.0
Median (*Mdn*)	196.0	213.0
Mode	228.0	238.0
Standard Deviation (*SD*)	32.1	28.7
Range	169.0	132.0
Minimum/Maximum	102.0/271.0	134.0/266.0
Skewness	-0.04	-0.43
Kertosis	-0.06	0.01
Frequency of Responses	See Appendix G	See Appendix G

Note. $n = 67$

The study data showed that ICC perception of competence in teamwork scores increased from pretest to posttest. The average score of ICC teamwork increased by 14 points (pretest $M = 197$; posttest $M = 211$) during the semester. The median score increased by 17 points (pretest $Mdn = 196$; posttest $Mdn = 213$), showing a similar increase as was seen in the change of the mean score. The standard deviation decreased by three points (pretest $SD = 32.1$; posttest $SD = 28.7$). The minimum score increased during the semester, rising from 102 in pretest to 134 in posttest, a 31% increase. The maximum score decreased in the testing period moving from 271 in pretest to 266 in the posttest.

The deviations in the descriptive categories showed that perception of competence scores in teamwork increased during the testing period. Most of the pre/post changes were minor in absolute terms. The greatest change was seen in the minimum scores with an increase of 32 points.

ICC Communication Descriptives

There were 67 matched pretest/posttest responses to the ICC communication statements. The total communication scores were out of a maximum of 140 possible points. Table 2 summarizes the ICC communication responses.

Table 2

Descriptive Statistics for ICC Communication

Statistics	Pretest	Posttest
Mean (*M*)	102.0	107.0
Median (*Mdn*)	105.0	107.0
Mode	111.0	103.0
Standard Deviation (*SD*)	17.7	14.7
Range	89.0	64.0
Minimum/ Maximum	42.0/131.0	64.0/135.0
Skewness	-0.07	-0.04
Kertosis	0.06	0.03
Frequency of Responses	See Appendix G	See Appendix G

Note. $n = 67$

The study data indicated that the ICC perception of competence in communication scores increased from pretest to posttest. The mean score of ICC communication increased by five points (pretest $M = 102$; posttest $M = 107$) during the testing period. The median score increased by two points (pretest $Mdn = 105$; posttest $Mdn = 107$) with a similar relative percent to maximum that was seen in the mean score. The standard deviation decreased by three points (pretest $SD = 17.7$; posttest $SD = 14.7$). Both the maximum and minimum scores of the range increased for this data set from pretest to posttest. The pretest minimum rose the most from 42 to 64, and the maximum scores increased by four points achieving a level of 135 in the posttest results.

The movement in these descriptive categories showed that the ICC perception of communication changed to the positive from pretest to posttest. Most of the changes were modest with the largest difference recorded in minimum scores of the two time periods.

MTCC Teamwork Descriptives

The third sub-question to be analyzed related to the MTCC students' perceptions of competence in teamwork. MTCC included 69 pretest/posttest matched responses. Table 3 summarizes the MTCC teamwork responses.

Table 3

Descriptive Statistics for MTCC Teamwork

Statistics	Pretest	Posttest
Mean (*M*)	202.0	216.0
Median (*Mdn*)	203.0	219.0
Mode	182.0	220.0
Standard Deviation (*SD*)	25.6	32.1
Range	113.0	143.0
Minimum/Maximum	144.0/257.0	131.0/274.0
Skewness	0.00	-0.45
Kertosis	-0.71	0.09
Frequency of Responses	See Appendix F	See Appendix F

Note. $n = 69$

The study data showed that MTCC perception of competence scores in teamwork moved to a higher level from pretest to posttest. The average score of MTCC teamwork increased by 14 points during the data collection period (pretest $M = 202$; posttest $M = 216$) with a similar increase in the median score of 16 points (pretest $Mdn = 203$; posttest $Mdn = 219$). The standard deviation increased by almost seven points (pretest $SD = 25.6$; posttest $SD = 32.1$). The minimum score decreased from 144 in pretest to 131 in posttest. The maximum score increased by 17 points in the testing period, rising to 274 in posttest from the pretest level of 257.

The movement of scores in these descriptive categories showed that perception of competence in teamwork increased from pretest to posttest. Most of the changes were modest with the largest difference recorded in the change in the maximum score of this data set.

MTCC Communication Descriptives

The fourth sub-question to be analyzed relates to the MTCC students' perceptions of their competence in communication. There were 69 matched responses from MTCC. Table 4 summarizes the MTCC communication responses.

Table 4

Descriptive Statistics for MTCC Communication

Statistic	Pretest	Posttest
Mean (*M*)	103.0	106.0
Median (*Mdn*)	103.0	108.0
Mode	95.0	103.0
Standard Deviation (*SD*)	13.1	16.5
Range	61.0	67.0
Minimum/ Maximum	67.0/128.0	68.0/135.0
Skewness	-0.37	0.17
Kertosis	-0.08	0.63
Frequency of Responses	See Appendix F	See Appendix F

Note. $n = 69$

The study data showed that MTCC perception of competence in communication increased from the beginning to the end of the data-gathering period. The mean score of MTCC communication increased by three points (pretest $M = 103$; posttest $M = 106$). Accordingly, the

median changed by five points (pretest *Mdn* = 103; posttest *Mdn* = 108). Also noted was a standard deviation increase of three points (pretest *SD* = 13.1; posttest *SD* = 16.5).

In summary, the fluctuations in these descriptive categories showed that perceptions changed to the positive from pretest to posttest. This supported the research hypothesis that students' perception of competence in teamwork and communication increased over the course of the semester. The detail scores of the descriptives of ICC and MTCC were nominally different in most cases; but holistically, the institutional scores changed in the same direction (up) and by similar proportions. Of particular interest is the difference in standard deviation scores in the pretest and posttest when comparing MTCC with ICC. A commentary will address the standard deviation differences in Chapter 5.

Differences were expected and are one way to observe the change in student perceptions of communication and teamwork. Because conclusions should not be rendered based on observed descriptives alone, the data analysis continued with an observation of repeated measures mixed design ANOVA (also called split-plot ANOVA). This is reviewed in the section to follow, Inferential Analysis.

Inferential Analysis

Repeated Measures Mixed Analysis of Variance

The inferential analysis addressed the perceptions of teamwork and communication at the ICC as compared to the perceptions of teamwork and communication at the MTCC. The repeated measures mixed ANOVA tested for the equality of means with the consideration of *between subjects* and *within subjects*.

The between-subjects design of this study compared the scores of MTCC and ICC students who are of similar groups exposed to different treatments at a particular point during the

semester. The treatment, in this case, is the curricula of each institution. It is the intent of the between-subjects design to test the significance of mean differences of the students of each institution. Additionally, this study included a within-subjects design. Through the within-subjects design the data reflects the changes of the same subjects having been exposed to the independent variable, curriculum. A pretest and posttest match was insured to maintain the integrity of this design. Finally, this is called a repeated measure because the same test was given to the same participants repeatedly (twice) over a given time period.

The intent of this analytical procedure was to test the significance of mean differences of a same group over time. The two institutions (ICC and MTCC) represented the between subjects variables, and the time periods (pretest and posttest) represented the within subjects feature of the data.

Repeated Measures Mixed Analysis of Variance for Teamwork

The repeated measures mixed ANOVA showed the change in perception of competence in teamwork of ICC and MTCC over the fall semester, 2015. The assumptions for the repeated measures analysis for teamwork were met using the appropriate tests subscribing to the following:

1. The dependent variables are continuous in that they are measured at an interval. This analysis used the teamwork and communication scores represented on an interval basis.
2. The same subjects are represented each group for both time periods.
3. Significant outliers are eliminated from the data set. All data for ICC and MTCC were reviewed and vetted for outliers.

4. The dependent variable should approximate a normally distributed curve. This can be seen and verified with a review of Appendix F and Appendix G.
5. The variances of the differences of the groups, called sphericity, must be equal. Box's test of co-variant matrices was used to determine sphericity.

The results were $p = .053$ for teamwork and $p = .001$ for communication. This qualified for the multivariate analysis.

Table 5 shows the results of within-subjects effect and between-subjects effect. In the table within subject pre-post all responses tested the main effect of time. This analysis used the Greenhouse-Geisser technique and showed that the pretest/posttest results indicated growth in perception of competence in teamwork. All responses were included irrespective of the school. The test measured the change in the responses from pretest to posttest with the null hypothesis that stated that there was no statistically significant growth between pretest and posttest. The significance level ($p = .000$) rejected the null. Furthermore, the effect size was large ($d = 1.08$).

Within subjects pre-post by school reviewed the interaction effect of teamwork perception of competence at ICC as compared to MTCC. This statistical analysis groups the data by schools and tests to see if one group had a consequence over the scores of the other. In other words, did MTCC have an influence over the ICC scores or vice versa. The null hypothesis stated that the change in perception of competence of teamwork at ICC did not influence the change of the perception of competence of teamwork at MTCC. A high significance value in this case ($p = .961$) failed to reject the null hypothesis, thus, supporting the notion that there was no interaction between the data sets.

The next inferential exercise addressed tests of between subjects effect. That is, the ICC perception of competence of teamwork compared to the MTCC perception of competence of teamwork. The null hypothesis stated that there is no statistical significance between the groups. A high significance value (p = .270) failed to reject the null hypothesis.

Table 5

Repeated Measures Analysis of Variance for Teamwork

Measure	F Value (1,134)	Significance	Effect Size
Within subjects pre-post all responses	29.5	.000	1.08
Within subjects interaction	.002	.961	0.01
Between subjects effects	1.23	.270	0.16

The final observation of the data is featured in the profile plots as shown in Figure 3. The profile plots give a visual description of the change in means from the pretest to the posttest of the two groups over time. It is observed that the MTCC mean increased by 14 points during the semester (M = 202 pretest; M = 216 posttest). This is a visual perception that gives reason to believe that MTCC perception of competence in teamwork grew over the time period observed. Similarly, the ICC mean changed in a positive direction of 14 points from pretest to posttest (M = 197 pretest; M = 211 posttest). The ICC perception of competence in teamwork appeared to grow. Since the means of both groups both increased by 14 points over the course of the semester the lines connecting the mean points are parallel. This indicates an increase in absolute

terms and an increase in relative terms leading to the conclusion that both groups grew and that growth was at or near the same rate.

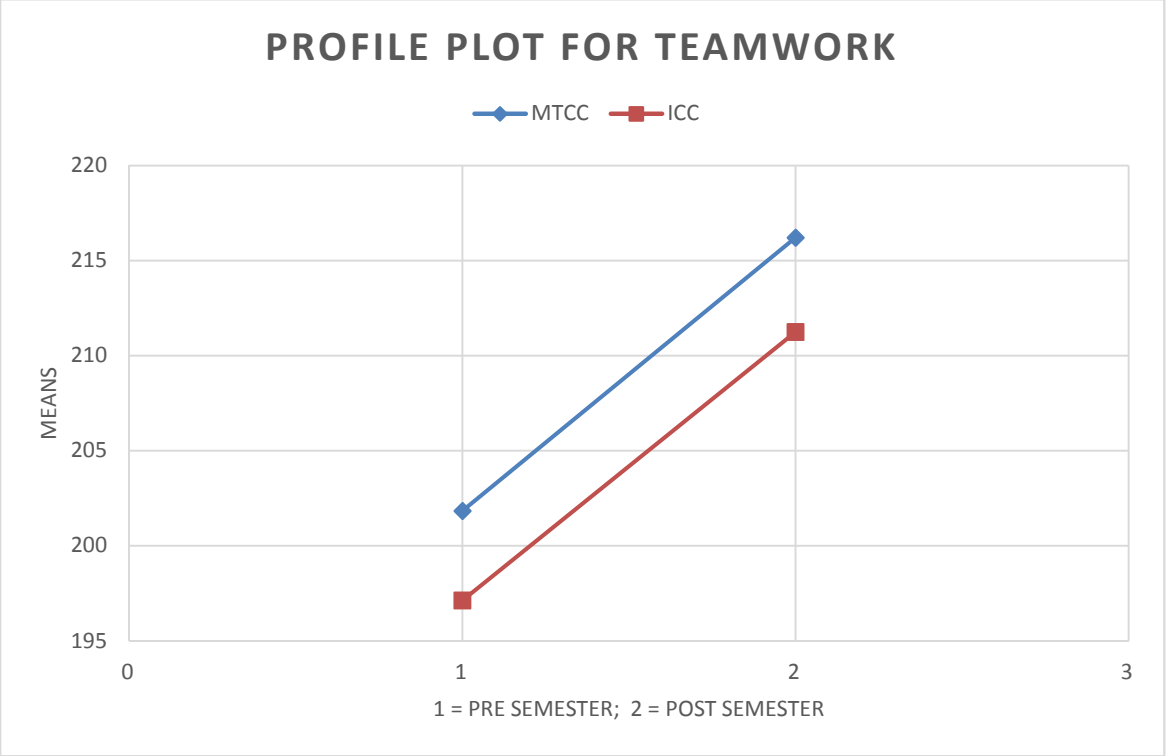

Figure 3. Profile plot for teamwork.

Repeated Measures Mixed Analysis of Variance for Communication

The repeated measures mixed ANOVA was utilized to examine the change in perception of competence in communication of ICC and MTCC over time. The seven appropriate tests for qualifying the mixed analysis ANOVA were used and found that this analysis was appropriate. Table 6 shows the results for the tests of within subjects and tests of between subjects.

This analysis of variance using the Greenhouse-Geisser technique showed that the effect of time indicated that there was growth in perception of competence for communication. The test measured the change in the responses from pretest to posttest with the null hypothesis, which

stated that there was no statistically significant growth between pretest and posttest. The significance level (p = .000) rejected the null. Furthermore, the effect size was small (d = 0.27).

The "within subjects interaction" reviewed the interaction of the perception of competence in communication at ICC as compared to MTCC. The null hypothesis stated that the change in perception of competence of communication at ICC did not influence the change of the perception of competence of communication at MTCC. A high significance in this case (p = .601) failed to reject the null hypothesis supporting the notion that there was no interaction between the data sets.

The final inferential analysis addressed tests of between subjects effect from the SPSS ANOVA analysis. The null hypothesis stated that there is no statistically significant difference in the overall growth in perception of competence between the groups. A high significance (p = .941) failed to reject the null hypothesis.

Table 6

Repeated Measures Analysis of Variance for Communication

Measure	F Value (1,134)	Significance	Effect Size
Within subjects pre-post all responses	8.149	.005	0.27
Within subjects interaction	.275	.601	0.06
Between subjects effects	.005	.941	0.03

The final observation of the data is featured in the profile plots. The illustration as shown in Figure 4 shows a definite change in means with each group. The growth of the perception of competence in teamwork is similar as reflected by the slope of the lines. The lines do cross which may suggest an interaction between the groups.

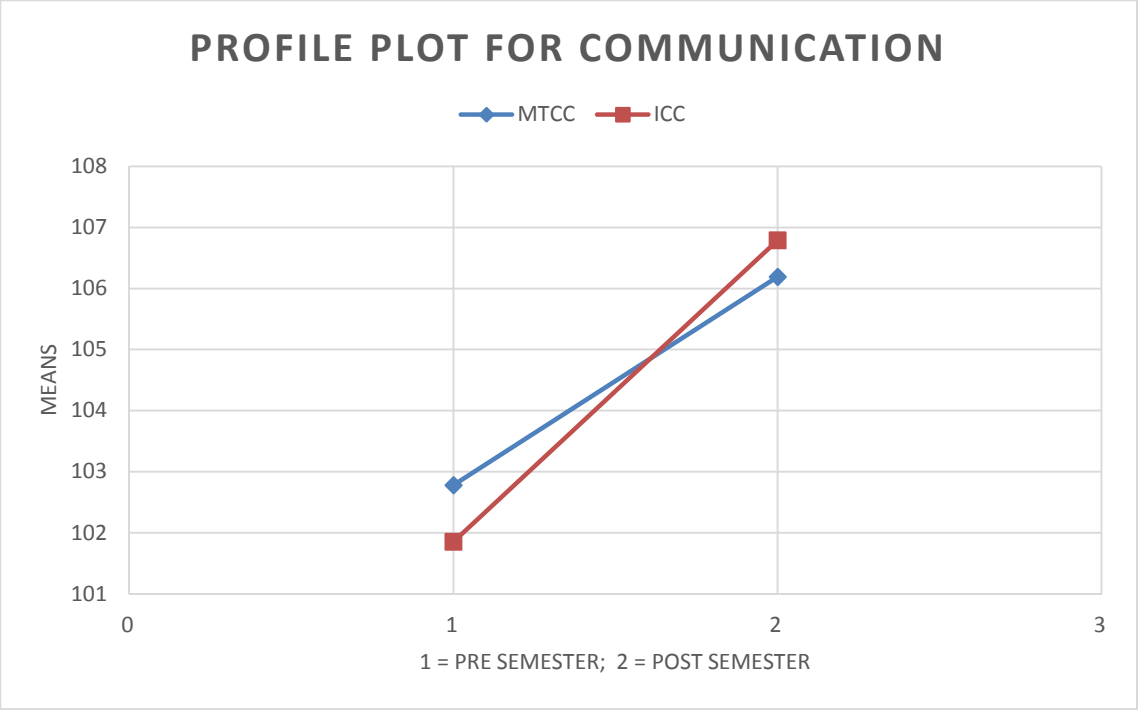

Figure 4. Profile plot for communication.

Paired Sample *T* Test

A paired sample *t* test was conducted using time (pretest/posttest) and responses to the teamwork and communication statements. The intent of this analysis was to determine if the gains in perceived competence within groups were statically significant. The research hypothesis stated that students at ICC would have a greater gain (growth) in the perception of teamwork and communication skill than students at MTCC. Accordingly, the null hypothesis stated that the gain (growth) of perception of teamwork and communication skill of ICC and MTCC was the same.

Table 7 shows the paired sample *t* test in the teamwork/communication totals. This included the summary scores of each set of statements per institution. A difference existed in the scores from pretest to posttest. The fundamental question becomes "Is this

difference statistically significant?" In other words, how likely is it that the data change is due entirely to a product of chance?

Table 7

Paired Samples T Test and ICC and MTCC Teamwork and Communication

Pair Identifier	Δ Mean	*SD*	*t*	*p*	*d*
ICC Teamwork Gain (Post-Pre)	14.1	33.3	3.47	.001	0.46
ICC Communication Gain (Post-Pre)	4.9	19.8	2.04	.045	0.31
MTCC Teamwork Gain (Post-Pre)	14.4	27.7	4.31	.000	0.50
MTCC Communication Gain (Post-Pre)	3.4	13.9	2.03	.046	0.23

Note. ICC $n = 67$; MTCC $n = 69$; $p < .05$

A paired sample *t* test was conducted to evaluate whether a statistically significant difference existed between the mean survey scores of teamwork at ICC from pretest to posttest in the fall semester of 2015. There was a statistically significant difference in the ICC teamwork scores between pretest ($M = 197.1$, $SD = 32.1$) and posttest ($M = 211.2$, $SD = 28.7$) conditions; $t(66) = 3.47$, $p = .001$. These results showed that there was a statistically significant change over time in the perception of teamwork skills for ICC students. The Cohen's *d* value ($d = 0.46$) indicated a medium effect size. The null hypothesis was rejected.

A paired sample *t* test was also conducted to evaluate whether a statistically significant difference existed between the mean survey scores of communication at ICC from pretest to posttest in the fall semester of 2015. There was a significant difference in ICC communication scores from pretest ($M = 101.8$, $SD = 17.7$) to posttest ($M = 106.8$,

SD = 14.7) conditions; $t(66) = 2.05$, $p = .045$. These results showed that there was a statistically significant change over time in communication for ICC students. The Cohen's *d* value ($d = 0.31$) indicated a small or modest effect size. The null hypothesis was rejected.

A paired sample *t* test was conducted to evaluate whether a statistically significant difference existed between the pretest/posttest mean survey scores of teamwork at MTCC in the fall semester of 2015. There was a statistically significant difference in MTCC teamwork scores from pretest ($M = 201.8$, $SD = 25.6$) and posttest ($M = 216.2$, $SD = 32.1$) conditions; $t(68) = 4.31$, $p = .000$. These results showed that there was a statistically significant change over time in teamwork for MTCC students. The Cohen's *d* value ($d = 0.50$) indicated a small effect size. The null hypothesis was rejected.

A paired sample *t* test was conducted to evaluate whether a statistically significant difference existed between the pretest/posttest mean survey scores of communication at MTCC in the fall semester of 2015. There was a statistically significant difference in MTCC communication scores from pretest ($M = 102.8$, $SD = 13.1$) and posttest ($M = 106.2$, $SD = 16.5$) conditions; $t(68) = 2.03$, $p = .046$. These results showed that there was a change over time in teamwork for MTCC students. The Cohen's *d* value ($d = .057$) indicated a medium or moderate effect size. The null hypothesis was rejected.

Individual Survey Statements Sample *T* Tests

The paired sample *t* test of individual survey statements from the two population groups was then conducted. Each school was analyzed separately by survey statement. This was conducted to determine if there were particular aspects of communication or teamwork for which there was a statistically significant change in perception over time.

An analysis of ICC responses found statistically significant changes in eight statements as identified in Table 8 related to teamwork from pretest to posttest. Statements 5, 13, 14, 15, and 16 featured perception competence of team engagement and perception of competence in member cohesion. The data suggested the perceptions of being proactive in a team situation. Statements 33, 34, and 39 represented perception of competence in team management. Further comment with conclusions and implications will be addressed in Chapter 5.

Table 8

ICC Teamwork Pretest to Posttest

Statement	*t*	*p*	*d*
Statement 5. I try to use the most appropriate team network to communicate the different types of information.	2.878	.005	.048
Statement 13. If someone in my team acts inappropriately. I encourage the rest of the team to talk privately with her/him.	3.548	.001	.516
Statement 14. To address the trivial task-related issues, I do not need to talk first with all team members so we can reach a decision.	2.871	.006	0.46
Statement 15. I make an effort to talk about less important things with my peers for the sake of team spirit.	2.281	.026	0.43
Statement 16. I make an effort to talk about less important things with my peers for the sake of better internal communication.	2.473	.016	0.45
Statement 33. I feel that when performing tasks in which one is an expert, the contributions made by other members are not that important.	4.408	.000	0.60
Statement 34. In group decision meetings, it is more useful to promote cohesion and reach a majority of agreement, than to pay attention to divergent opinions.	2.188	.032	0.34
Statement 39. It is important for me to monitor the tasks assigned to each team member.	2.549	.013	0.36

Note. $n = 67$

Table 9 identifies the communication statements with a statistically significant change ($p < .05$) for ICC. They were 23, 24, 31, and 40. These communication statements clustered around the theme of message clarity to group members. Also, these statements focused upon communication within the team meeting environment. Both individual communication (within/between peers) and general group communication were represented by the statements. Role responsibilities were also included in the communication statements.

Table 9

ICC Communication Pretest to Posttest

Statement	*t*	*p*	*d*
Statement 23. I play an active role in team meetings by asking questions.	2.276	.026	0.30
Statement 24. I play an active role in team meetings by expressing my thoughts and ideas in a sincere and open way.	2.174	.033	0.36
Statement 31. During group meetings, regulation is necessary to ensure that all members provide their opinions.	-2.134	.037	0.33
Statement 40. I provide my peers with relevant information on how well I think the team tasks are progressing.	2.266	.027	0.33

Note. $n = 67$

The MTCC communication data indicated that no individual statement or cluster of statements had a statistically significant difference between pretest and posttest. The MTCC teamwork data, however, did show several aspects of teamwork for which there was a statistically significant difference from pretest to posttest.

Statements 1, 3, 4, 6, and 12 all addressed interpersonal relationships within groups. The data showed that the MTCC students had a change in their perceptions of interpersonal

relationships at the end of the semester as compared to the beginning of the semester. Statements 13, 14, 25, and 39 addressed task management within the group. The student responses to these statements suggested that they had produced a statistically significant difference in perception of greater competence of task management. Further comment with conclusions and implications will be addressed in Chapter 5. Table 10 represents statements with statistically significant differences ($p < .05$) in ratings from the MTCC student responses.

Table 10

MTCC Teamwork Pretest to Posttest

Statement	*t*	*p*	*d*
Statement 1. When my work team is in conflict, I try to make it explicit to find solution pathways.	2.793	.007	0.39
Statement 3. When I disagree with others, I make an effort to focus on what we have in common.	2.591	.012	0.36
Statement 4. I plan my tasks effectively.	2.375	.020	0.28
Statement 6. I often get involved in monitoring the task performance of other team members.	3.932	.000	0.55
Statement 12. If someone in my team acts inappropriately, I talk privately with her/him.	3.001	.004	0.41
Statement 13. If someone in my team acts inappropriately. I encourage the rest of the team to talk privately with her/him.	3.873	.000	0.522
Statement 14. To address the trivial task-related issues, I do not need to talk first with all team members so we can reach a decision.	3.476	.001	0.49
Statement 25. I help others in my team to make clear the roles and tasks they have to perform.	2.966	.004	0.41
Statement 39. It is important for me to monitor the tasks assigned to each team member.	2.019	.047	0.26

Note. ($n = 69$)

The individual statement survey analysis described above determined if there were particular aspects of communication or teamwork with a statistically significant change in perception over time. Each school had a cluster of individual statements that showed statistically significant change (growth). The ICC students had four statistically significant communication statements and eight statistically significant teamwork statements. The MTCC students had nine statistically significant teamwork statements. There were only two teamwork statements common to both populations.

Summary

A pretest/posttest survey of teamwork and communication was given to two populations of Midwestern college business students enrolled in two different business curricula. Data were gathered and statistically reviewed with descriptive and inferential analytical techniques. This study addressed four descriptive and two inferential questions relating to the 21st century skills of teamwork and communication. The four descriptive questions addressed a change in perception of competence in teamwork and communication of students in the two institutions over time. The inferential questions compared the two institutions to determine if one group changed their perception of teamwork and communication competence to a degree greater than the other over time.

The above questions were addressed in two ways (a) changes in perception of competence in teamwork and communication from pretest to posttest for each institution: and (b) degree of change in teamwork and communication comparing one institution to another.

The issues and questions were addressed with an observation and analysis of the means. The tests and subsequent statistics indicated that there were, indeed, changes in mean scores from pretest to posttest in teamwork and communication for both schools. Mean scores

increased in teamwork and communication for both schools indicating a growth in perception of competence. The effect size of the growth was small to moderate.

The profile plots for both teamwork and communication showed a change in the means for both schools as illustrated in Figures 3 and 4. Both institutions increased the pretest/posttest means over time and but at a slightly different rate. The teamwork profile plot showed upward sloping lines for both institutions at a very similar rate. The teamwork lines were in virtual parallel with one another. The communication profile plots showed similar, yet different characteristics. Both lines were upward sloping. The ICC line was increasing at a slightly higher rate that MTCC which yielded an intersection point. The differences were very small and did not yield a statistically significant conclusion that the ICC curriculum yielded higher results than that of MTCC. Chapter 5 continues this discussion with commentary on findings, conclusions reached, and a look to the future of research.

CHAPTER 5

DISCUSSION OF FINDINGS, CONCLUSIONS AND IMPLICATIONS, AND RECOMMENDATIONS FOR FUTURE RESEARCH

The descriptive and inferential enquiry of this study is summarized and presented in the first section of this chapter. The discussion of findings continues with conclusions and implications of the data followed by a comment on future research. The survey interpretations represent the statistically based discoveries of each research question. The data were analyzed in terms of changes in means, statistical significance, and power as they relate to the research problem. The conclusions reported in this chapter provide the basis for the continued study of this topic.

Each research question was reported with a statistical summary of the results of the TWCT. This survey tool allowed the participants to share their perceptions of competency in teamwork and communication in August of 2015 and again in December of 2015. The differences in scores from posttest compared to pretest represented changes or growth in perception of competency.

Restatement of the Problem and Summary of the Methodology

The problem is that businesses feel that students are graduating without the development of 21st century skills needed in the dynamic work environment. According to Dudley et al. (1995), 21st century skills such as communication and interpersonal relationships were critical

skills for new employees as they worked in an arena of stakeholders of diverse backgrounds. These authors suggested businesses have discovered that new graduates with a proficiency in one or more 21st century skills such as communication can be trained in the business principles that they lack. Bennis and O'Toole (2005) noted that the B-School curriculum must include multidisciplinary, practical issues. "The problem is not that business schools have embraced scientific rigor but they have forsaken other forms of knowledge" (Bennis & O'Toole, 2005, p. 10). They added that, too often, business schools measured their effectiveness in terms of the degree and the amount of research they encourage and generate, rather than the degree and the amount of preparation they instill in students for the practical business arena.

Building upon a solution to the above, this study investigated a new and inventive business curriculum at ICC. The first-year business study at ICC included an emphasis on communication and teamwork couched within the course design of a business plan competition. It is believed by the ICC business school faculty and administration that this emphasis provides the basis for the initial and continued development of 21st century skills throughout a four-year curriculum. Two teaching approaches were observed in this study exercise; the team-based project competition approach at ICC, and a conventional approach to business school education at MTCC.

This study observed the growth of students' perceptions of communication and teamwork after one semester of business studies at ICC and compared those perceptions to the perceptions of students at MTCC. A quantitative analysis was conducted to determine change in the students' perception of their competence in teamwork and communication. If growth was detected, the direction and the degree of the change was noted and discussed. Additionally,

further quantitative tests and measurements were conducted to see if the innovative curriculum at ICC produced a growth greater than that of the more traditional curriculum at MTCC.

The type of evaluation chosen was a quasi-experimental study. The quantitative approach to data analysis aligned very well with the type of questions and the format of the answers of the TWCT. Participants responded to statements of communication and teamwork and communication on a 0 to 10 choice scale. Thus, the students had a wide breadth of responses, which provided for a more insightful analysis.

The null hypothesis stated that there was no difference in the teamwork posttest data as compared to the teamwork pretest data regarding the perception of competence of students at ICC and MTCC. A second null hypothesis stated that there was no difference in the communication posttest data as compared to the communication pretest data regarding the perception of competence of students at ICC and MTCC.

The population of this study included 69 students from MTCC and 67 students from ICC. The study spanned two time periods of data collection. The first survey (pretest) was administered at the beginning of the fall 2015 semester with the posttest administered at the end of the semester in December. The replies were matched to ensure that each student of this study had a pretest and a posttest set of responses. In all, MTCC had 69 matched replies and the ICC group totaled 67. Only matched replies were included in this study. The surveys were administered during class time periods made available by professors in the respective colleges.

Descriptive analyses were used to address the following questions regarding student perceptions:

1. At the ICC what are students' perceptions of their competence in teamwork?

2. At the ICC what are students' perceptions of their competence in communication?
3. At the MTCC what are students' perceptions of their competence in teamwork?
4. At the MTCC what are students' perceptions of their competence in communication?

Inferential analyses were employed to address the following questions designed to compare the business school curricula:

1. After one semester, how do the changes in perception of teamwork competence at ICC compare to those at MTCC?
6. After one semester, how do the changes in perception of communication competence at ICC compare to those at MTCC?

Discussion of Findings

The results of this study identified growth within each institution and sought to determine if that growth was statistically significantly different at one institution over the other. The growth rate could be positive, negative, or static. Furthermore, could that growth rate be influenced by the type of curriculum at ICC or MTCC?

Perception of competence, whether it is communication or teamwork, is a subjective measure that requires an introspective opinion relative to each individual student. It is a belief unique to each respondent that can be quantified through the TWCT. This survey instrument provided a platform for students to express their opinion on a scale of breadth (1 to 10), which accommodates a quantitative analysis of their views.

The level of perception was recognized as a percentage to a maximum quantitative level. As noted in the discussion above, the teamwork maximum was 300 points, and the communication maximum was 140 points. The topic areas covered in the teamwork part of the TWCT statements included team engagement, member cohesion, participative problem solving,

and conflict resolution strategy. The communication statements addressed open and supportive communication, message clarity, verbal and nonverbal communication, listening skills, and feedback.

Question 1 Descriptive Analysis

At the ICC what are students' perceptions of their competence in teamwork? This question was addressed by a review of the pretest scores and the posttest scores. The baseline score was chronicled from the pretest data. The ICC students had a teamwork mean score in the pretest that was 65% of the maximum (M = 197.1). This score was consistent with the teamwork level expected for incoming freshmen. Students have had some interaction with the concept of teamwork but not an in-depth understanding of what it means to be a part of a business team. When compared to the posttest scores (M = 211.2), the ICC teamwork mean increased to 70% of the maximum, a change of five percentage points. This was an indicator of a gain in perception of competence in teamwork. In addition to the increase in the teamwork mean, the standard deviation went down in the posttest (SD = 28.7). The change in mean was a nominal increase of 14.1 points, and the change in standard deviation was a nominal decrease of 3.1 points. Not only did the mean go up, indicating an increase in the perception of competence, but also a lower standard deviation suggested that there was less dispersion around the mean.

The change in standard deviation (decrease) was notable and implied that the scores were closer to the mean as confirmed by the difference in the high-to-low scores. The range differential from pretest (range = 102 to 271) to posttest (range = 134 to 266) was a net decrease of 37 points. The median score increased by 17 points from the pretest (median = 196) to the posttest (median = 2313) providing another sign that there may have been growth in the perception of teamwork competence for ICC. Kurtosis and skewness were stable from the

pretest (kurtosis = -.05; skewness = -0.37) to posttest, which promoted the claim that the histogram had a reasonably normal appearance. Kurtosis represents the level of peak or flatness in the data, and skewness is the degree to which the data leans to the right or left of the mean. This is important because data that approaches a normal bell-curve shape provides for an informative descriptive analysis (Abbott, 2011). The more normal the data, the closer the kurtosis and skewness values are to 0. This data can be observed visually with histograms that are shown in Appendix E.

The above analysis of mean, standard deviation, and range may imply that the students were closer to an organizational consensus of the concept of teamwork at the end of the semester. The curriculum may have played a factor in the pretest/posttest changes in the mean. Other influences which may have impacted the semester changes may have come from the maturing of the student over the semester, more comfort in student life at the end of the semester, a greater appreciation of the concept of teamwork, or even the feeling of being around other students who shared a similar academic experience in their first year business course. In any case, the increase in the mean and the decrease in standard deviation/range were noteworthy and represented a possible growth in perception of competence in teamwork.

Question 2 Descriptive Analysis

At the ICC what are students' perceptions of their competence in communication? This question was addressed by a review of pretest scores and posttest scores of the TWCT. The reference point for the descriptive analysis of this question was found in the pretest data. The ICC students had a mean score in pretest that was 73% of the maximum (M = 101.9). This was higher than the teamwork mean to maximum but not unexpected. An explanation of the communication score to be higher than the teamwork score is in the thought that the students

were more sensitive and close to perception of competence in communication than to teamwork. When compared to the posttest mean score (M = 106.8), ICC communication mean increased by three percentage points. This represented a higher level of competence in communication and an indicator of a gain at the posttest period. In an observation similar to the teamwork data, the standard deviation went down by three points in the posttest (SD = 14.7).

The change in standard deviation (decrease) implied that the scores were clustered closer to the mean at the end of the semester than at the beginning. This was confirmed by the difference in high-to-low scores. The range decreased by 18 points from pretest (range = 42 to 131) to posttest (range = 64 to 135). Additionally, the median score increased by five points from pretest (mdn = 102) to posttest (mdn = 107), which demonstrated that there was a general increase in a feeling of competence in communication.

The above analysis of mean, standard deviation, and range may imply that the students were closer to an organizational consensus of the concept of communication at the end of the semester. Factors which may include curriculum may have contributed to an increase in the average scores and a tighter cluster around the mean. Other dynamics may have included the maturing of the student over the semester, more comfort in student life at the end of the semester, a greater appreciation of the concept of teamwork, or even the feeling of being around other students who shared a similar academic experience. The increase in the mean and the decrease in standard deviation/range were noteworthy and represented a possible growth in perception of competence in communication.

Question 3 Descriptive Analysis

At the MTCC what are students' perception of their competence in teamwork? The pretest and posttest scores provided the basis for analysis and conclusions. The MTCC students indicated growth in their perception of competence in teamwork from pretest to posttest. The starting point for the descriptive analysis began with the pretest data. The MTCC students had a teamwork mean score in pretest that was 67% of the maximum (M = 201.8). This was within two percentage points of the ICC score. When associated to the posttest scores (M = 216.2), the MTCC teamwork mean increased to 72% of the maximum. Also noted in the posttest, the standard deviation went up. The change in mean was an increased 14.4 points and the change in standard deviation was an increase of 6.5 points.

The change in standard deviation (increase) implied that the scores were less dispersed around the mean. The range differential from pretest (range = 144 to 257) to posttest (range = 131 to 274) was a net increase of 30 points. The median score increased by 16 points from pretest (median = 203) to posttest (median = 219) indicating that there was a general increase in feeling of teamwork competence. Kurtosis and skewness were stable from pretest (kurtosis = -0.71; skewness = .001) to posttest (kurtosis = 0.09; skewness = -0.45). When kurtosis (degree of flatness) and skewness (degree of data imbalance) approach 0 the histogram has a reasonably normal appearance. The histogram illustrating teamwork at MTCC is shown in Appendix E.

The above analysis of mean, standard deviation, and range does imply that the students increased in their perception of competence in teamwork but were more spread out around the mean. The increase in standard deviation may imply that there may have been a more diverse understanding of teamwork at MTCC at the end of the semester than at the beginning. Some of the MTCC student respondents (28%) recorded a lower score on the posttest than on the pretest.

The curriculum may not have been the only factor that contributed to an increase in the average score and a change in the cluster around the mean. As with the students at ICC other influences may have included the maturing of the student over the semester, more comfort in student life at the end of the semester, a greater appreciation of the concept of teamwork, or even the feeling of being around other students who shared a similar academic experience. The change in mean and standard deviation was notable and represented a possible growth in perception of competence in teamwork.

Question 4 Descriptive Analysis

At the MTCC what are students' perceptions of their competence in communication? The MTCC students had a greater perception of their competence in communication in the posttest data collection period than that of the pretest period influenced primarily by the increase of the mean.

The score from which the descriptive analysis was based comes from both the pretest and posttest data. The MTCC students had a mean score in pretest that was 73% of the maximum (M = 102.8). When compared to the posttest scores (M = 106.2), the MTCC communication mean increased to 76% of the maximum. Additionally, the standard deviation went up as captured by the posttest results. The change in mean was an increase of 3.4 points and the change in standard deviation was an increase of 3.4 points.

The change in standard deviation (increase) implied that the scores were more dispersed around the mean as confirmed by the difference in high-to-low scores. The range differential from pretest (range = 67 to 128) to posttest (range = 68 to 135) was an increase of six points. The median score increased by five points from pretest (median = 103) to posttest (median = 108) indicating that there was a general increase in a feeling of competence in communication.

Kurtosis and skewness were stable from pretest (kurtosis = -0.08; skewness = -0.37) to posttest (kurtosis = 0.63; skewness = 0.16). When kurtosis (degree of flatness) and skewness (degree of data imbalance) approach zero the histogram has a reasonably normal appearance. The histogram illustrating teamwork at MTCC is shown in Appendix E.

The above analysis of mean, standard deviation, and range may imply that the students were closer to an organizational consensus of the concept of communication at the end of the semester. The curriculum may have been a factor that contributed to an increase in the average score and a change in the cluster around the mean. Other factors may have included the maturing of the student over the semester, more comfort in student life at the end of the semester, a greater appreciation of the concept of teamwork, or perhaps the feeling of being around other students who shared a similar academic experience. The change in mean and standard deviation was noteworthy and represented a possible growth in perception of competence in communication.

The descriptive analysis supported the conclusion that the perception of competence in both teamwork and communication increased in both institutions. The descriptive analysis does not, however, indicate the significance of the changes and the influence that the curricula of ICC and MTCC had on the changes. The inferential analysis will lend to the conclusions on the curricular influence.

Inferential Sub-Question 1

After one semester, how do the changes in perception of teamwork competence at ICC compare to those at MTCC? This question is best addressed by using the repeated measures mixed analysis of variance, also called the split plot ANOVA. This analytical model tested whether the innovative college curriculum student group grew more in perception of teamwork

than that of the traditional college curriculum student group. The data met the five qualifications of the repeated measures analysis (a) continuous variables, (b) same subjects, (c) outliers eliminated, (d) approximate the normal curve, and (e) test of sphericity.

The first statistical analysis performed was the within-subjects pre/post all responses. This analysis looked at all responses, irrespective of school, to determine if there was a change in scores from the pretest period to the posttest period. The statistics showed that there was a large change indicated by the variance of scores, pretest to posttest, associated with the feeling of competence in teamwork. The null hypothesis suggested that scores would not change from one collection period to another. The significance level was less than the .05 threshold ($p = .000$) indicating that the null should be rejected. This reflected a definite change in scores over the pretest data collection period and the posttest semester time. The effect size was large as noted by the Cohen's d value ($d = 1.08$), which suggested that the mean value of the perception of competence in teamwork shifted by more than one standard deviation of the normal curve.

The next statistical measure employed was the within-subjects pretest/posttest analysis by school, also called the interaction effect. This procedure was used to see if the ICC group of scores influenced the MTCC group of scores. The null hypothesis stated that there was no statistically significant interaction between the schools. The Greenhouse-Geisser comparison of variance failed to reject the null, $F(1,134 = .002)$, $p = .96$, which suggested that the scores within ICC did not influence the scores within MTCC.

The next analysis was in the between-subjects effect. The between-subjects test was designed to determine if there was a statistical significance of the mean difference of scores between the two institutions. The data showed that a statistical significance did not exist between ICC an MTCC. The p value between the groups was larger than the .05 threshold ($p =$

.27), which indicated that the curriculum did not have a statistically significant effect on change in students' perceptions of teamwork competence. In other words, the curriculum did not matter in the growth of teamwork as the difference in scores produced more than 27% of the time by random sampling error. Not surprisingly, the effect size was very small ($d = 0.16$). Less than 1% of the growth in teamwork was attributed to the curriculum. There was a very small degree of change indicated by the variance of pretest to posttest between the subject groups.

Inferential Sub-Question 2

After one semester, how do the changes in perception of communication competence at ICC compare to those at MTCC? As with teamwork previously mentioned, this question is best addressed by using the repeated measures mixed analysis of variance. This analytical model tested whether the innovative college curriculum group grew more in perceptions of communication than the growth of the traditional college curriculum group.

The first analysis was designed to show if there was a statistically significant change in perception of competence in communication scores as a whole from the pretest to the posttest. The significance level ($p = .000$) rejected the null hypothesis, which stated that there was no difference in the scores, overall, from pretest to posttest. The effect size was small as noted by the Cohen's d value ($d = .27$), which suggested that even though the change was statistically significant, the power of that change was modest. In other words, Cohen's d looked at the effect of the independent variable, scores over time, in terms of standard deviations. The mean value of the communication data shifted by 27% of one standard deviation of the normal curve.

The next statistical analysis performed was the pre/post semester scores by school interaction. This technique was employed to discover any interaction that existed in the data. The null hypothesis stated that there was no confounding factor that influenced the data from one

data pool to the other. The Wilks' Lambda comparison of variance failed to reject the null, $F(1,134 = .28)$, $p = .60$, which suggested the interaction effect was not statistically significant. Over 60% of the time one group did not influence the scores of the other group. Confident that there was no interaction between groups, the analysis continued in respect to the main effect of time.

The next analysis was in the between-subjects effect. The between-subjects test was designed to determine if there was statistical significance of the mean difference of scores between the two institutions. The data showed that a statistical significance did not exist between ICC an MTCC. The p value between the groups was larger than the .05 threshold ($p = .94$), which indicated that the curriculum did not have a statistically significant effect on change in students' perceptions of communication competence. In other words, the curriculum did not matter in the growth of communication, as the difference in scores would be produced more than 94% of the time by random sampling error. Not surprisingly, the effect size was very small ($d = .003$).

Inferential Paired Sample *T* Test

A paired samples t test was conducted to compare the perception of competence in communication/teamwork pretest to the perception of competence in communication/teamwork posttest. The research hypothesis stated that students at ICC would have a greater perception of teamwork and communication in the posttest period. Furthermore, the research hypothesis stated that students at MTCC would have a greater perception of teamwork and communication in the posttest period. The null hypothesis for both ICC and MTCC stated that the perception of competence in teamwork and the perception of competence in communication did not change from the pretest period to the posttest period.

A paired samples *t* test for perception of teamwork competence at ICC indicated that the scores were statistically significant for the pretest/posttest data collection period $t(66) = 3.47$, $p = .001$, $d = 0.46$. There was a change in scores from the time periods with a moderate Cohen's *d* effect size, which implied that the mean score moved 46% of a standard deviation.

A paired samples *t* test for perception of communication competence at ICC indicated that the scores were statistically significant for the pretest/posttest data collection period $t(66) = 2.04$, $p = .045$, $d = 0.31$. There was a change in scores from the time periods with a small effect size. The ICC perception of competence in communication data produced a small or modest Cohen's *d* ($d = 0.31$), which means that even though the alternative hypothesis was accepted the mean score only moved 30% of a standard deviation which is considered small according to Cohen's conventions (Cohen, 1988).

A paired samples *t* test for perception of teamwork competence at MTCC indicated that there was a statistically significant score for the pretest/posttest data collection period $t(68) = 4.31$, $p = .000$, $d = 0.50$. The mean increased by 14.4, 7% from the pretest data and the standard deviation increased by 25%. The MCC perception of competence in teamwork data produced a medium or moderate Cohen's d ($d = 0.50$).

A paired samples *t* test for perception of communication competence at MTCC indicated that pretest/posttest data produced scores that were statistically significant $t(68) = 2.03$, $p = .045$, $d = 0.23$. A small effect size was noted which implied that the posttest mean changed by 23% of a standard deviation which is small according to Cohen's conventions (Cohen, 1988).

Table 11 shows the paired samples *t* test in a comparative display. Considering teamwork, MTCC had a slightly greater increase in the paired differences mean, which contributed to a lower standard deviation (*SD* = 27.7), a higher *t* value (*t* = 4.31) and greater effect size (*d* = 0.50). The paired samples *t*-test featuring perception of competence in communication showed ICC with a greater paired differences mean which, accordingly, produced a larger standard deviation, an almost identical *t* value (*t* = 2.05) and eta squared (*d* = 0.31).

Table 11

Summary Table of the Paired Samples T Test for ICC and MTCC Communication and Teamwork

Pair	Paired Difference Means	*SD*	*t*	Cohen's *d*
ICC Teamwork	14.1	33.3	3.47	0.46
ICC Communication	4.9	19.8	2.05	0.31
MTCC Teamwork	14.4	27.7	4.31	0.50
MTCC Communication	3.4	13.9	2.03	0.23

The analysis continued with the paired sample *t* test on each pair of questions within each school. A test of reliability, Cronbach's alpha, was performed on the cluster statements for each institution. Cluster statements are those groups of statements which have had a large *t* score and low *p* value and subscribed to a particular theme. In all instances the clusters had a Cronbach's alpha considered acceptable in social science research settings ($\alpha > .7$).

The MTCC had no questions in communications that had a high, paired difference mean value and a large *t* score with a small *p* value. However, the MTCC teamwork had nine teamwork statements with high, paired difference mean values and large *t* scores with small *p* values and an acceptable Cronbach's alpha ($\alpha = .78$). These questions addressed teamwork planning and team member dynamics. ICC communication had four questions that changed in a statistically significant way from pretest to posttest and delivered a Cronbach's alpha in an acceptable range ($\alpha = .74$). These questions related to expressing thought and asking questions of the team members. Also, ICC had eight teamwork questions that indicated a statistically significant change from pretest to posttest also exhibiting an acceptable Cronbach's alpha ($\alpha = .74$). These questions centered on goal setting and team member involvement.

The MTCC paired sample *t* test of teamwork produced nine statements with a statistically significant change from pretest to posttest. Of note, there was a cluster of five statements that related to interpersonal relationships. These statements (1, 3, 4, 6, and 12) showed higher growth than other statements over the semester. The reason for this increase may include that the students developed a camaraderie with each other over the course of the semester, became friends through other clubs and organizations on campus, became more comfortable with campus life, or found that the traditional curriculum facilitated interpersonal relationships. See Table 8 for a list of the individual questions in this cluster.

The MTCC curriculum did include an interactive classroom business exercise. It is reasonable to suggest that the growth of interpersonal relationships is a natural outcome of the class project experience. Of this five-statement group, statements numbers 6 and 12 were the highest in significance (rejecting the null hypothesis) and effect size (Cohen's *d*). Statement 6 was "I often get involved in monitoring the task performance of other team members," with

statement 12 similar by saying "If someone in my team acts inappropriately, I talk privately with her/him." This could mean that the students were taking more ownership of the group performance at the end of the semester and felt that they could interject comment and counsel to affect a greater outcome.

The other cluster of MTCC teamwork statements related to task management. These statements had a managerial theme in which the respondent had to act in a proactive manner. Statements in this cluster included numbers 13, 14, 25, and 39. Table 8 identifies the statements with specificity. Questions 13, 14, and 25 were similar in significance and strength. Key phrases in this cluster were (a) acts inappropriately, (b) trivial task-related issues, (c) make clear the roles, and (d) monitor the tasks. A rationale for the strength of this cluster could be similar to the rationale for statements 1, 3, 4, 6, and 12 above. It is interesting to note that this cluster is more proactive and management driven. Student had to feel that they must act in a causal manner to influence behavior.

In contrast to the MTCC responses the ICC teamwork statements produced eight statements of statistical significance. Statements 5, 13, 14, 15, and 16 created a cluster that featured perception competence of team engagement and perception of competence in member cohesion. The remaining statements, numbers 33, 34, and 39 represented perception of competence in team management. Only three teamwork statements were common to MTCC and ICC.

The common term in the ICC engagement and cohesion cluster was *talk*. The ICC group seems to make the connection to teamwork through verbal exchange. The semester-long experience in producing a workable business plan could be the conduit to teamwork through verbal expression. It is possible that the students became more comfortable with the nature of

the planning process during the course of the semester. Factors unrelated to an innovative curriculum could have included the students becoming more familiar with one another in the college environment, discovering common interests with others over the course of the semester, or relating to common experiences outside the classroom.

The second ICC cluster is team management. Three statements featured the following terms: (a) contributions, (b) decision making, and (c) monitoring tasks. This relates to the students in their ability to lead, guide, and/or direct the activities of others. In this role the students see themselves influence as authority figures to assist in facilitation of tasks. The growth over the semester could be referenced to the business plan project in which students were encouraged to take a managerial role in different part of the project. In effect, students were both leaders and followers depending upon the task at hand and of the different phases of the business plan project. Students had the opportunity to see themselves in the varied roles of project management.

The ICC students also had a four-statement cluster of communication with statistically significant growth over the semester. The theme of this cluster is expressing thoughts, information, and providing for a constructive exchange of opinion. The ICC business plan theme encouraged a dialog among the participants to act as a flow of input to the tasks at hand. This growth could be caused by the innovative curriculum or influenced by a process of maturing of the student to college life. Communication development is a part of many different college courses, not limited to the introductory business classes. Students may have grown in communication by the interchange of other college classes.

Conclusions

This study was designed to determine if an innovative business school curriculum had a positive impact on perceived competence in communication and teamwork for first-semester freshmen. A year-long curricular inquiry and development brought about the introduction of the innovative curriculum to ICC. Many 21st century skills were considered for the reconfigured curriculum. The developers of the curriculum at ICC recognized that it was not possible to address all 21st century skills at once. Therefore, the curriculum development decision was made to stage the introduction of the 21st century skills at different times in the progression of classes for the new business curriculum. The Table 12 shows the timing of the 21st century skill emphasis of the curriculum.

Table 12

ICC 4 Year Curriculum

Year	Course	Title	21st Century Skills
Year 1	BUS 109	Business Plan Competition	Communication and Teamwork
Year 2	BUS 209	Quantitative Analysis of Business	Quantitative Analysis and Project Management
Year 3	BUS 309	Comprehensive Analysis of Business	Scientific and Technological Literacy
Year 4	Varied		Experiential Learning

This study provided evidence that there was a change in the perception of competence in teamwork at the end of the semester when compared to the beginning of the semester by both institutions. Furthermore, a change was noted in the perception of competence in communication at the end of the semester when compared to the beginning of the semester by

both institutions. The change (growth) of teamwork or communication was not statistically significant in one institution over the other. However, there was one point of interest. The standard deviation of teamwork and communication at ICC became smaller at the end of the semester and the standard deviation of teamwork and communication at MTCC became larger at the end of the semester.

The descriptives for teamwork clearly showed that the statistical mean changed for both groups in a positive manner with a normal curve shift to the right. This may have, within itself, indicated that there was change in the perception competence in teamwork from both institutions with no distinctive change of one group over the other. Upon further review it was of interest to note that the standard deviation decreased for ICC and the standard deviation increased for MTCC. The cluster around the mean became tighter for the ICC data during the same time period which showed a looser cluster around the mean for the MTCC data. Another way to confirm this point was to observe the change of range of the two populations. The ICC range went down as the MTCC range went up.

One may conclude that not only did the perception of competence in teamwork go up but the high-to-low response collection of scores went down. This may mean that the ICC students gained a more common set of perceptions of competence in teamwork at the end of the semester than that reported by the MTCC students. The innovative curriculum may have created a common sense of perception more than that of the more traditional curriculum.

A similar set of observations existed for the communication data. Once again, the mean increased for both populations. As shown in the teamwork data, the communication data indicated a decrease in the standard deviation for ICC and a corresponding increase in the standard deviation for the MTCC. As with teamwork data, this may show that not only did the

ICC students increase in the statistical mean score but there was a commonality or consistency in the perception of competence for communication. This same conclusion cannot be drawn from the MTCC data which, even though the mean went up over time, the standard deviation and the spread from high to low also went up.

The study revealed that the innovative curriculum students and the traditional curriculum students increased in both communication and teamwork during the fall semester of 2015. Of particular note, there were more advances in the perception of teamwork by both institutions than advances in the perception of communication by both institutions. The research did not support the premise that students in the first year of business studies at ICC had a greater perception of teamwork and communication than by those who attended MTCC.

The changes in standard deviations were an interesting point. At ICC the standard deviations for teamwork and communication decreased and the standard deviations at MTCC increased for both teamwork and communication. Standard deviation represents the dispersion of data points around a mean. The lower the standard deviation, the more tightly the scores are clustered around the mean. This posed a possibility that the ICC students came to a more unified consideration or definition of teamwork and communication than that of the MTCC students.

The concepts of teamwork and communication are embedded in the curricular framework of the beginning business course at ICC. The theme of the course is the business plan that requires the input and cooperation of a small team of five to seven students. Teamwork and communication is encouraged from the beginning of the course until the final presentation at the end of the semester. Throughout this experience the students come to realize the importance of collaboration in word and deed.

Implications

Bennis and O'Toole (2005) expressed a concern that the business school of today is losing touch with the needs and dictates of the business community. Dudley et al. (1995) concurred that business schools should listen to businesses as a company listens to its customers. The curriculum at ICC was designed to align with the premise of Behrman and Levin (1984) that creativity should permeate the new business curriculum and should move away from the traditional, silo approach to business education. It can be surmised that the feelings of concern from the business community regarding the preparation of graduates with 21st century skills is not errant and will not pass away with time.

Changes needed in business education and innovation in business school curricula remain important. Daly (1992) felt that professional readiness of graduates in the workplace is contingent upon applying knowledge and skills in a manner consistent to the preparation of business students.

Business effectiveness is, by its nature, guided by an active relationship of its members. The interplay for a positive outcome of the business model is centered upon communication and teamwork. The understandings that are expressed through an effective communication channel coupled with the synergistic outcomes of working together are the building blocks of business efficacy for the 21st century. The ability of a business curriculum to instill the value of relationships through communication and teamwork will serve the student and the business community well.

Practical implications to ICC, institutions of higher education, and the business community of this scholarly research include (a) finding ways to enhance self-analysis of teamwork and communication (b) establishing a program of continued development of teamwork

and communication throughout the college curriculum, and (c) leveraging the benefits of communication and teamwork by establishing curricular goals.

The findings of this study were (a) both institutions increased in teamwork mean, (b) both institutions increased in communication mean, (c) neither institution proved to be statistically dominant over the other in perception of competence in teamwork or communication, and (d) the cluster of scores around the mean, as shown by standard deviation, was more pronounced with the ICC sample than with the MTCC sample at the end of the semester in both teamwork and communication. Further review and study of teamwork and communication perceptions should be conducted to support or dispute the findings of this study. In so doing, factors which may have influenced the outcomes should be identified in order to recognize the impact of innovative or traditional curriculum. Some of those factors which require such attention are (a) student demographics, (b) course objectives in the introductory business class, (c) student extracurricular activities, (e) course pedagogy, and (e) career interest of the student.

The lack of findings of this study represents an interest and enthusiasm to continue the research in the innovative curriculum. The overarching issue is how to prepare students for the 21st century workplace. The lack of findings asks for more inquiry, observation, and research in the delivery of a relevant business curriculum. The factors identified above become the filter from which a conclusion can be reached.

This study showed that gains in communication and teamwork can be found in the early stages of both a traditional and an innovative business curriculum. This implies that an ongoing system of observation of communication and teamwork is necessary in order to more fully come to the conclusion that the innovative model, such as that practiced at ICC, is appropriate to prepare students for the 21st century workplace. Gains attributed to the innovative approach to

business study may not show themselves during in the first semester of a student's academic college experience. A continued system of observation and inquiry should be established to monitor change/growth in a student's perception of competence in teamwork and communication.

A theme of communication and teamwork should be prevalent in all aspects of the ICC curriculum. Communication and teamwork is inherent in the ICC curriculum and should be observed and measured for changes/growth. Evaluative exercises and progress markers should be used in each successive year of study of the business curriculum. This may be subjective observation or a specific measurement of a pretest and posttest each semester.

The ongoing research should look at the implications of areas which are not changing/growing in a positive way. The individual statement paired sample *t* test not only shows positive change/growth but also shows negative or stagnant change/growth. The implication is that areas for improvement can be identified and actions taken to correct deficiencies. The researcher will then suggest ways to reduce the deficiencies evident by those statements that did not change/grow in a positive way.

At present, the ICC curriculum does not have curricular goals specific to communication and teamwork for each year of study. This is a condition fostered by design. The architects of the innovative curriculum at ICC did not want to establish constraints or boundaries that would place limits on the development of the 21st century skills that include communication and teamwork. Now, in its fourth year of operation, the curriculum development officers may want to have a system of ongoing tests and measurements that subscribe to defined outcome goals. The intent will be to leverage the benefits of communication and teamwork through the curriculum as the students study business analysis and engage in experiential learning activities.

The implication for the long term is that businesses may benefit from the emphasis of an innovative curriculum, such as that introduced at ICC. The command of 21st century skills, which include teamwork and communication, coupled with the technical aspects of a business curriculum will equip the students with the tools necessary to perform effectively in the modern business environment. A system of tests and measurements will help to insure that the curriculum continues to development the 21st century skills necessary for the modern businesses in the future.

Recommendations for Future Research

This study represented the beginning of multifaceted research on the preparations of men and women for a career in business. The 21st century skills go far beyond the confines of communication and teamwork. The innovative business program at ICC begins in the freshman year with an emphasis on communication and teamwork. These skills are addressed and honed as other 21st century skills are added throughout the student's business study. The ICC curriculum emphasizes one or more 21st century skill for each successive class year. The perceptions of competence in all skill capacities should be measured and analyzed each year.

This study is an entrée to further inquiry and review. It was not considered to be an end within itself. Development and refinement of additional testing methodology is suggested. The TWCT is an adequate instrument for understanding students' perceptions of competence in teamwork and communication and is suggested for continued use. However, other instruments to measure teamwork and communication could be reviewed and implemented as necessary. Test instruments should be identified, reviewed, and prepared for use by the fall semester of 2016 for the second year (sophomore) students at ICC. Every effort will be made to maintain trend data.

The second year curriculum at ICC introduces method-based statistical analysis skills as students work as a team to complete a class project. They are expected to integrate the project analytics within the context of management and marketing. This experience allows the student to build upon their teamwork and communication concepts and add quantitative thought integrated into a planning sphere of project management.

Additionally, the second-year curriculum supports inventive thinking which includes curiosity, creativity, and risk taking. The sophomore-level projects involve a real-world client requiring the students to produce a product, which is of a high-quality standard. Communication and teamwork will be on a more technical level subscribing to a business project management model. Students will use the terminology germane to a professional business setting with the objective to achieve an effective and efficient experience in a business project construct. Detailed duties and responsibilities will subscribe to a highly interactive team construct.

The second year proposed research will include a measure of teamwork and communication within the context of analytical skills. A testing instrument should be chosen to adequately measure the degree of communication and teamwork effectiveness appropriate with this level of business interaction. This will be a validated, commercially available instrument. The instrument should provide the researcher with information that supports the evidence of changes/growth over time. The inherent danger of changing the instrument is that it may jeopardize the integrity of trend data. The instrument will be changed only if it will bring about a value-added benefit to the study.

The third year of the school of business curriculum features all of the above 21st century skills plus the requirement of scientific, economic, and technological literacies. Students are required to operate in project teams and provide a recommendation for a corporate acquisition.

Although hypothetical in nature, the students use real information to form high-level, corporate upper management decisions. They use sound reasoning to support their recommendations as they tap into their higher order thinking and deliberation skills.

This future research would include another visit to the perception of competence in communication and teamwork. It will be an instrument such that changes/growth can be measured over time. The TWCT instrument is preferred, as it will provide the consistency necessary to compare results over time. The TWCT lends well to the repeated measures analysis. A pattern, revealed over time, should become evident with the changes/growth of competence in teamwork and communication within the students. A repeated measures ANOVA in conjunction with statistical descriptives and paired samples *t* tests will help to gauge the perception of competence changes over time. TWCT statements will be clustered to align with the communication and teamwork objectives of each successive year. It is hoped that by analyzing the clustered TWCT will help to understand strengths and weaknesses of the curriculum.

The final year of the students' business curriculum features the real-world experiences of internships and corporate experiences. This was designed to round out the 21st century skill exposure to the student. Full integration of digital age literacy, inventive thinking, effective communication, and high productivity output are the goals of this stage.

The traditional model delivers content in a silo approach. That is, courses are constructed within the framework of their specific business discipline. Blending of discipline content is not featured in the traditional delivery program. Integration of skills is assumed to occur during the normal matriculation of the college career. The innovative program offered by ICC encourages the blending of business discipline in a holistic approach to content delivery.

Future research should feature the following topic areas to judge the effectiveness of the ICC innovative model. Note that the following is a multi-year, multifaceted data gathering and analysis routine which ends when the students find their places in the modern 21st century professional world.

Additional future research will include continued study on the teamwork and communication skills with the TWCT (or other suitable instrument) with each new freshman class. Specifically, the researcher should review those paired sample *t*-tests results of the individual statements that did not reveal a statistically significant change/growth over time. The *t*-test feedback will be forwarded to the curriculum designers for academic content revision and improvement. Additional future research will include

1. A review of the current testing instrument (TWCT) to determine its effectiveness of reporting perception of competence in teamwork and communication.
2. A growth trend diary to be kept as a record of the difference (if any) in teamwork and communication over time with each successive matriculating class.
3. A fourth year of data gathering and analysis survey of the above plus a set of integration questions to see the level of competence students feel they have before entering the professional the workplace.
4. An investigation of an opportunity for a control group to participate in the further study of communication and teamwork.
5. The development of a graduate and employer survey addressing the readiness of ICC students for the 21st century workplace. Descriptive and inferential analysis will help to determine the effectiveness of the innovative curriculum at ICC.

Primary Investigator's Final Thoughts

As I reflect back upon this academic study, I feel that I have uncovered more questions than I have answered. I am pleased with this study—its methodology, procedure, and results. The process and all elements of this study subscribed to academic research conventions.

This study represents the appropriate starting point for the continued research as outlined above. As with any project of this type, an alpha point, such as demonstrated by this study, must be established to provide a foundation of the work to follow. The curriculum at ICC provides an excellent basis for this continued research. Each year, a new set of students arrives in the school of business and with each year students will progress to another level of business enquiry and instruction. The instructors at ICC will have a round-table discussion to review the year 1 curriculum given that no statistically significant differences were noted between ICC and MTCC. The involvement of one or of many business schools at other institutions could be addressed by future researchers to determine the appropriate actions based upon the research problem and associated questions.

REFERENCES

Abbott, M. L. (2011). *Understanding educational statistics using Microsoft Excel and SPSS.* Hoboken, NJ: John Wiley & Sons.

Abraham, S. E., & Karnes, L. A. (2009). Do business schools value the competencies that businesses value? *Journal of Education for Business, 84,* 350-356. doi:10.3200/JOEB.84.6.350-356

Aguado, D., Rico, R., Sánchez-Manzanares, M., & Salas, E. (2014). Teamwork competency test (TWCT): A step forward on measuring teamwork competencies. *Group Dynamics: Theory, Research, and Practice, 18*(2), 101-121. doi:10.1037/a0036098

Alexander, E., Jernigan, I. E., & Henwood, C. (1991). Communication abilities of managers: The relationship to performance. *Journal of Management, 17*(1), 57-76. doi:10.1177/014920639101700105

American Assembly of Collegiate Schools of Business (AACSB). (1996). *A report of the AACSB faculty leadership task force.* St. Louis, MO: AACSB

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (1999). *Standards for educational and psychological testing.* Washington, DC: Author.

Anderson, R. (2008). *Implications of the information and knowledge society for education.* New York, NY: Springer.

Andrews, J., & Higson, H. (2008). Graduate employability, 'soft skills' versus 'hard' business knowledge: A European study. *Higher Education in Europe, 33,* 411-422. doi:10.1080/03797720802522627

Applebome, P. (1995, February 20). Employers wary of school system: Survey finds broad mistrust of younger aspirants. *New York Times,* A1, A13.

Armstrong, M. J. (2003). Students as clients: A professional services model for business education. *Academy of Management Learning & Education, 2,* 371-374. doi:10.5465/AMLE.2003.11901964

Ary, D., Jacobs, L., & Sorensen, C. (2010). *Introduction to research education* (8th ed.). Belmont, CA: Wadsworth.

Behrman, J. N., & Levin, R. I. (1984). Special report: Are business schools doing their job? *Harvard Business Review, 62*(1), 140-147. Retrieved from http://www.hbr.org

Bennis, W. G., & O'Toole, J. (2005). How business schools lost their way. *Harvard Business Review, 83*(5), 96-104. Retrieved from https://hbr.org/2005/05/how-business-schools-lost-their-way

Bierstaker, J. L., Howe, M. A., & Seol, I. (2005). The effects of the 150-credit-hour requirement for the certified public accountant (CPA) exam on the career intentions of women and minorities. *Journal of Education for Business, 81*(2), 99-104. doi:10.3200/JOEB.81.2.99-104

Bloom, A. (1987). *The closing of the American mind.* New York, NY: Simon & Schuster.

Bok, D. (1996). *The cost of talent.* New York, NY: The Free Press.

Boone, J. P., & Coe, T. L. (2002). The 150-hour requirement and changes in the supply of accounting undergraduates: Evidence from a quasi-experiment. *Issues in Accounting Education, 17,* 253-268. doi:10.2308/iace.2002.17.3.253

Boud, D. G., & Garrick, J. (1999). *Understanding learning at work.* London, UK: Routledge.

Buckley, M. R., Peach, E. B., & Weitzel, W. (1989). Are collegiate business programs adequately preparing students for the business world? *Journal of Education for Business, 65*(3), 101-105. doi:10.1080/08832323.1989.10118587

Burkhardt, G., Monsour, M., Valdez, G., Gunn, C., Dawson, M., Lemke, C., Coughlin, E., . . . Martin, C. (2003). *Literacy in the digital age.* [Executive summary]. Naperville, IL: North Central Regional Educational Laboratory & Metiri Group.

Cappelli, P. (1995). Is the "skills gap" really about attitudes? *California Management Review, 37*(4), 108-124. Retrieved from https://archive.org/details/ERIC_ED358320

Casner-Lotto, J., Barrington, L., & Partnership for 21st Century Skills. (2006). *Are they really ready to work? Employer's perspectives on the basic knowledge and applied skills of new entrants of the 21st century U.S. workforce.* New York, NY: The Conference Board. Retrieved from https://www.conference-board.org/pdf_free/BED-06-Workforce.pdf

Cheit, E. F. (1985). Business schools and their critics. *California Management Review, 27*(3), 43-62. doi:10.2307/41165141

Clinebell, S. K., & Clinebell, J. M. (2008). The tension in business education between academic rigor and real-world relevance: The role of executive professors. *Academy of Management Learning & Education, 7*(1), 99-107. doi:10.5465/AMLE.2008.31413867

Coe, R. (2002, September). *It's the effect size, stupid.* Paper presented at the annual conference of the British Educational Research Association, University of Exeter, Exeter, England. Retrieved from http://www.leeds.ac.uk/educol/documents/00002182.htm

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences.* Hillsdale, NJ; Erlbaum.

Coll, R. K., Zegwaared, K., & Hodges, D. (2002). Science and technology stakeholders' ranking of graduate competencies Part 1: Employers perspective. *Asia-Pacific Journal of Cooperative Education, 3*(2), 19-28. Retrieved from http://www.apjce.org/files/APJCE_03_2_35_44.pdf

Daly, W. T. (1992). The academy, the economy, and the liberal arts. *Academe, 78*(4), 10-12. doi:10. 2307/40250350

Davison, L., Brown, J., & Davison, M. (1993). Employer satisfaction ratings of recent business graduates. *Human Resource Development Quarterly,* 4(4), 391-399

DeAngelo, H., DeAngelo, L., & Zimmerman, J. L. (2005). *What's really wrong with U.S. business schools?* Retrieved from http://fisher.osu.edu/~young.53/DeAngelo-DeAngelo-Zimmerman.pdf

Delanty, G. (2000) *Challenging knowledge: The university in the knowledge society.* Buckingham, England: The Society for Research into Higher Education & Open University Press.

Doria, J., Rozanski, H., & Cohen, E. (2003). What business needs from business schools. *Strategy and Business, 2003*(32), 38-45. Retrieved from http://www.strategy-business.com/article/03305?gko=527bd

Dostaler, I., & Tomberlin, T. J. (2013). The great divide between business school research and business practice. *Canadian Journal of Higher Education, 43*(1), 115-128. Retrieved from http://files.eric.ed.gov/fulltext/EJ1007033.pdf

Dudley, S. C., Dudley, L. W., Clark, F. L., & Payne, S. (1995). New directions for the business curriculum. *Journal of Education for Business, 70,* 305-310. doi:10.1080/08832323.1995.10117769

English, D., Manton, E., Sami, A. R., & Dubey, A. (2012). A comparison of the views of college business graduate and undergraduate students on qualities needed in the workplace. *College Student Journal, 46,* 427-435. Retrieved from http://eric.ed.gov/?id=EJ994231

Fallows, S., & Stevens, C. (2000). Building employability skills into the higher education curriculum: A university-wide initiative. *Education and Training, 42*(2/3), 75-83. doi:10.1108/00400910010331620

Ferris, W. P. (2002). Students as junior partners, professors as senior partners, the B-school as the firm: A new model for collegiate education. *Academy of Management Learning and Education, 1*(2), 185-193. doi:10.5465/AMLE.2002.8509373

Fischer, A. (2007). The trouble with MBAs. *Fortune International (Europe), 55*(7), 1-4. Retrieved from http://archive.fortune.com/magazines/fortune/fortune_archive/2007/04/30/8405397/index.htm

Friga, R. N., Bettis, R. A., & Sullivan, R. S. (2003). Changes in graduate management education and new business school strategies for the 21st century. *Academy of Management Learning and Education, 2,* 233-249. doi:10.5465/AMLE.2003.10932123

Gioia, D. A., & Corley, K. G. (2002). Being good versus looking good: Business school rankings and the Circean transformation from substance to image. *Academy of Management Learning & Education, 1,* 107-120. doi:10.5465/AMLE.2002.7373729

Gordon, R., & Howell, J. (1959) *Higher education for business.* New York, NY: Columbia University Press.

Grey, C. (2004). Reinventing business schools: The contribution of critical management education. *Academy of Management Learning and Education, 3*(2), 178-186. doi:10.5465/AMLE.2004.13500519

Hatcheul, A., & Glise, H. (2004). *Rebuilding management: A historical perspective.* In N. Adler, A. B. Shani, & A. Styhre (Eds.), *Collaborative research in organizations: Foundations for learning, change, and theoretical development* (pp. 1-21). Thousand Oaks, CA: Sage.

Hodges, D. B., & Burchell, N. (2003). Business graduate competencies: Employers' views on importance and performance. *Asia-Pacific Journal of Cooperative Education, 4*(2), 16-22. Retrieved from http://www.apjce.org/files/APJCE_04_2_16_22.pdf

Hynes, G. E., & Stretcher, R. (2008). A missing link in business schools. *Business Communication Quarterly, 71,* 207-211. doi:10.1177/1080gy9908317079

Ingbretsen, R. (2009). *What employers really look for when hiring a college graduate.* Retrieved February 18, 2015, from http://searchwarp.com/swa437827-What-Employers-Really-Look-For-When-Hiring-A-College-Graduate.htm

Innovative. (2015). In *Merriam-Webster's online dictionary.* Retrieved from http://www.merriam-webster.com/dictionary/innovative

Kavanaugh, M. H., & Drennan, L. (2008). What skills and attributes does an accounting graduate need? Evidence from student perceptions and employer expectations. *Accounting and Finance, 48,* 279-300. doi:10.1111/j.1467-629X.2007.00245.x

Kerr, C. (2001). *The uses of the university.* Cambridge, MA: Harvard University Press.

Khurana, R. (2007*). From higher aims to hired hands: The social transformation of American business schools and the unfulfilled promise of management as a profession.* Princeton, NJ: Princeton University Press.

Khurana, R., & Nohria, N. (2008). It's time to make management a true profession. *Harvard Business Review, 86*(10), 70-77. Retrieved from https://hbr.org/2008/10/its-time-to-make-management-a-true-profession

Kieser, A., & Leiner, L. (2009). Why the rigour-relevance gap in management research is unbridgeable. *Journal of Management Studies, 46,* 516-533. doi:10.1111/j.1467-6486.2009.00831.x

Kirkland, E. C. (1956). *Dream and thought in the business community.* Ithaca, NY: Cornell University Press.

Kirp, D. L. (2003). *Shakespeare, Einstein and the bottom line: The marketing of higher education.* Harvard, MA: Harvard University Press.

Kryder, L. A. (1997). Communication skills: What you need to succeed. *New Accountant, 12*(4), 12-13.

Langbert, M. (2000). Professors, managers, and human resource education. *Human Resource Management International, 39*(1), 65-78. doi:10.1002/(SICI)1099-050X(200021)39:1<65::AID-HRM6>3.0.CO;2-Q

Leavitt, H. J. (1989). Educating our MBAs on teaching what we haven't taught. *California Management Review, 31,* 38-50. doi:10.2307/41166569

Levenburg, N. (1996). General management skills: Do practitioners and academic faculty agree on their importance? *Journal of Education for Business, 72*(1), 47-51. doi:10.1080/08832323.1996.10116825

Livingston, J. S. (1973). Myth of the well-educated manager. *Harvard Business Review, 49,* 79-88. Retrieved from https://hbr.org

Maes, J. D., Weldy, T. G., & Icenogle, M. L. (1997). A managerial perspective: Oral communication competency is most important for business students in the workplace. *Journal of Business Communication, 34*(1), 67-80. doi:10.1177/002194369703400104

Mangan, K. S. (2002, April 10). Business educators call for new accreditation standards. *Chronicle of Higher Education.* Retrieved from http://chronicle.com/article/Business-Educators-Call-for/115727/

Meister, J. C. (2006). Corporate universities: What works and what doesn't. *Chief Learning Officer, 5*(3), 28-32. Retrieved from http://www.clomedia.com/articles/corporate_universities_what_works_and_what_doesn_t

Merritt, J. (2004). Is there a doctor in the B-School? Universities are searching for ways to graduate more business PhDs. *BusinessWeek, 3872,* 104.

Messmer, M. (1997). Career strategies for accounting graduates. *Management Accounting, 79,* 4-10. Retrieved from http://go.galegroup.com

Mintzberg, H. (1973). *The nature of managerial work.* New York, NY: Harper & Row.

Mintzberg, H. (2004). *Developing managers not MBAs.* London, England: Prentice Hall.

Moore, T. E. (1997). The corporate university: Transforming management education. *Accounting Horizons, 11*(1), 77-85. Retrieved from https://www.researchgate.net/publication/247819453_The_corporate_university_Transforming_management_education

Nowotny, H., Scott, P., & Gibbons, M. (2001). *Re-thinking science: Knowledge and the public in an age of uncertainty.* Oxford, England: Polity Press.

Owen, D. (1994). *Maturity and modernity.* London, England: Blackwell.

Pfeffer, J., & Fong, C. T. (2002). The end of business schools? Less success than meets the eye. *Academy of Management Learning & Education, 1*(1), 78-95. doi:10.5465/AMLE.2002.7373679

Pfeffer, J., & Fong, C. T. (2004). The business school 'business': Some lessons from the US experience*. *Journal of Management Studies, 41,* 1501-1520. doi:10.1111/j.1467648l2004.00484.x

Pierson, F. C. (1959). *The education of American businessmen.* New York, NY: McGraw-Hill.

Podolny, J. M. (2009). The buck stops (and starts) at business school. *Harvard Business Review, 87*(6), 62-67. doi:10.1225/R0906G

Porter, L., & McKibbin, L. (1988). *Management education and development: Drift or thrust into the 21st century?* New York, NY: McGraw Hill.

Raymond, M. A., McNabb, D. D., & Matthaei, C. F. (1993). Preparing graduates for the workforce: The role of business education. *Journal of Education for Business, 68,* 202-206. doi:10.1080/08832323.1993.10117613

Reading, B. (1999). *The university in ruins.* Cambridge MA: Harvard University Press.

Reingold, J. (1998). The best B-Schools. *BusinessWeek, 3600,* 86-92.

Rockinson-Szapkiw, A. J. (2013, August 28). *Effect size* [Video file]. Retrieved from http//www.youtube.com/watch?v=rL32SjaHq2A&t=946s

Rousseau, D. M. (2012). Designing a better business school: Channeling Herbert Simon, addressing the critics, and developing actionable knowledge for professionalizing managers. *Journal of Management Studies, 49,* 600-618. doi:10.1111/j.1467-6486.2011.01041.x

Rubin, R., & Dierdorf, E. (2009). How relevant is the MBA? Assessing the alignment of required curricula and required managerial competencies. *Academy of Management, 8,* 208-224. doi:10.5465/AMLE2009.417888843

Sadri, G. (2002). Identifying core business school competencies*. Online Journal of Teaching and Learning in the CSU.* Retrieved from http://www.exchangesjournal.org/print/print_1044.html

Salbu, S. (2002). *Forward.* In B. Cruver (Ed.) *Anatomy of greed: The unshredded truth from an Enron insider* (pp. xi-xiv). London, England: Hutchinson.

Scheetz, L. P. (1995). *Recruiting trends, 1995 - 96. Education supplement: A study of 294 elementary and secondary school systems employing new teacher education graduates.* East Lansing, MI: Michigan State University. Retrieved from http://files.eric.ed.gov/fulltext/ED391787.pdf

Shani, A. B. (2003). *Learning by design.* London, England: Blackwell.

Silva, E. (2008). Measuring skills for the 21st century. *Education Sector Reports,* 1-11. Retrieved from http://www. educationpolicy.air.org/sites/default/files/publications/MeasuringSkills.pdf

Simon, H. A. (1991). *Models of my life.* New York: Basic Books.

Simon, M. (2011). Assumption, limitations, and delimitations. *Dissertation and scholarly research: Recipes for success.* Retrieved from http://www.dissertationrecipes.com

Smith, M. L., & Glass, G. V. (1977). Meta-analysis of psychotherapy outcome studies. *American Psychologist, 32,* 752-760.

Starkey, K., & Tempest, S. (2004). Researching our way to economic decline. In N. Adler, A. B. Shani, & A. Styhre (Eds.), *Collaborative research in organizations: Foundations for learning, change, and theoretical development* (pp. 23-36). Thousand Oaks, CA: Sage.

Starkey, K., Hatchuel, A., & Tempest, S. (2004). Rethinking the business school. *Journal of Management Studies, 41,* 1521-1531. doi:10. 1111/j. 1467-6486. 2004. 00485.x

Starkey, K., & Tempest, S. (2005). The future of the business school: Knowledge challenges and opportunities. *Human Relations, 58*(1), 61-82. doi:10.1177/0018726705050935

Starkey, K., & Tempest, S. (2008). A clear sense of purpose? The evolving role of the business school. *Journal of Management Development, 27,* 379-390. doi:10.1108/02621710810866732

Stephenson, J. (1997). *Capability: Education for life and work.* Wellington, New Zealand: Education and Training Support Agency.

Stevens, M. A., & Campion, M., J. (1999). Staffing work teams: Development and validation of a selection test for teamwork settings. *Journal of Management, 25,* 207-228. doi:10.1016/S0149-2063(99)80010-5

Tanyel, F., Mitchell, M. A., & McAlum, H. G. (1999). The skill set for success of new business school graduates: Do prospective employers and university faculty agree? *Journal of Education for Business, 75*(1), 33-37. doi:10.1080/08832329909598987

Trank, C. Q., & Rynes, S. L. (2003). *Who moved our cheese?* Reclaiming professionalism in business education. *Academy of Management Learning & Education, 2,* 189-205. doi:10.5465/AMLE.2003.9901678

Veblen, T. (1968). *The higher learning in America.* New York, NY: Hill & Wang.

Voogt, J. M., & Odenthal, L. E. (1997). *Portraits of emergent practices: Conceptual framework.* Enschede, Netherlands: Universiteit Twente.

Voogt, J. M., & Roblin, N. P. (2010). *21st century skills.* Discussion paper. (Kennisnet Report). Enschede, Netherlands: University of Twente. Retrieved from http://development.todosmedia.com/klassetheater/wp-content/uploads/2015/04/discussie-nota-21_st_century_skills-.pdf

Webber, R.A. (1976). Career problems of young managers. *California Management Review, 18*(4), 19-33. doi:10.2307/41164665

White, W. T. (1970). The business school today: Its challenge and essential characteristics. *Journal of Business Communications, 7*(4), 26-34. doi:10.1177/002194367000700406

Whyte, W. H. (1957). *The organization man.* New York, NY: Simon & Schuster.

Xie, C., & Steiner, S. (2013). Enhancing education relevance: Joint creation of knowledge between business schools and businesses. *Business Education and Accreditation, 5*(2), 1-16. Retrieved from http://www.theibfr.com/archive/bea-v5n2-2013.pdf

Zuboff, S. (1988). *In the age of the smart machine: The future of work and power.* New York, NY: Basic Books.

APPENDIX A: INFORMED CONSENT

Date

A STUDY OF AN INNOVATIVE BUSINESS SCHOOL CURRICULUM

You are being invited to participate in a research study about your perception of communication and teamwork. This study is being conducted by Robert D. Schuttler, MBA, a student in the Department of Educational Leadership, Bayh College of Education at Indiana State University. The study is being conducted as part of a dissertation in partial fulfillment of the requirements for the PhD degree in Educational Leadership.

You were selected as a possible participant in this study because you are a student in a university business course, and I am evaluating student perceptions of communication and teamwork as part of that curriculum.

There are no known risks if you decide to participate in this research study. There are no costs to you for participating in the study. The information you provide will be used to note any change in your perception of teamwork and communication from the beginning of the semester to the end.

The questionnaire will take about 15 minutes to complete. The information collected may not benefit you directly, but the information learned from this study should provide more general benefits.

This survey is anonymous, as you will not be asked to write your name on the survey. Instead, you will be asked to provide a four-digit identifier on your survey so that your responses will be able to be matched when you take this survey at the end of the semester. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study. I do ask, however, that you please try to remember what number you place on the survey so that it will accurately match your survey at the semester's end. Individuals from Indiana State University and the Institutional Review

Board may inspect these records. Should the data be published, no individual information will be disclosed.

Your participation in this study is voluntary. This survey is in no way connected to your participation in the course in which it is administered. By completing and handing in the survey paper to Mr. Schuttler, you are voluntarily offering informed consent and are agreeing to participate. You are free to decline to answer any particular question you do not wish to answer for any reason.

If you have any questions about the study, please contact Robert D. Schuttler, MBA 3200 Cold Spring Road, Indianapolis, Indiana 46222, 317-955-6038, robert@marian.edu.

If you have any questions about your rights as a research subject or if you feel you have been placed at risk, you may contact the Indiana State University Institutional Review Board (IRB) by mail at Indiana State University, Office of Sponsored Programs, Terre Haute, Indiana 47809, by phone at (812) 237-8217, or by e-mail at irb@indstate.edu.

Robert D. Schuttler, MBA
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Indianapolis, Indiana 46222
317-955-6038
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APPENDIX B: TEAMWORK COMPETENCY TEST (TWCT)

(Aguado, D., 2014)

Description of the test instrument

Record Type:
Master **Test** Record
Acronym:
TWCT
Test Year:
2014
Test Child Records:

Teamwork Competency Test (TWCT) [**Test** Development]

Teamwork Competency Test (TWCT): A step forward on measuring **teamwork competencies**. (AN: 2014-16733-001 from PsycINFO).

Authors: Aguado, David; Rico, Ramón; Sánchez-Manzanares, Miriam; Salas, Eduardo

Source: Group Dynamics: Theory, Research, and Practice. 18(2), Educational Publishing Foundation, US.

Age Group: Adulthood (18 yrs & older); Young Adulthood (18-29 yrs)

Population: Human; Male; Female; Location: Spain; Sample: University Students

Keywords: Planning and Task Coordination Subscale; Team Performance; **Teamwork Competency Test**; **Test** Development; Collaborative Problem Solving Subscale; Communication Subscale; Confirmatory Factor Analysis; Conflict Resolution Subscale; Goal Setting and Performance Management Subscale; Internal Consistency
Subjects: Communication; Competence; Conflict Resolution; Factor Analysis; Goal Setting; Group Performance; Group Problem Solving; Measurement; Rating Scales; **Test** Construction; **Test** Reliability; Work Teams

Authors:
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Address:
Aguado, David, Autonomous University of Madrid, Ciudad Universitaria de Cantoblanco, Madrid, Spain, 28049, david.aguado@uam.es.

Language:
English; Spanish

Construct:
Teamwork Competency

Purpose:
The **Teamwork Competency Test** measures **teamwork** knowledge, skills, and abilities.

Description:
The **Teamwork Competency Test** (TWCT; Aguado et al., 2014) measures **teamwork** knowledge, skills, and abilities. An initial set of 83 items was constructed, which was progressively refined to the final 36 items. New items were developed represent the 14 subcompetencies established by Stevens and Campion (1994). Based on interviews with three experts in the fields of **teamwork** and organizational behavior, several items were rephrased (seven items) or left out (31 items). The remaining 52 items were applied to different samples and, taking into account the item statistics (corrected item-total correlation and factor loadings), 16 items were deleted. Factor analyses resulted in eight factors: Conflict Resolution, Problem Solving, Decision Making, Communication, Information Communication, Planning and Coordination, Monitoring and Assessing, and Offering Feedback. Confirmatory factor analysis resulted in the factors being assigned to the Interpersonal and Self-Management dimensions. The analyses of both dimensionality and congruence revealed the integration of items in the Communication subcompetency into the Conflict Resolution **competency**. The Collaborative Problem Solving scale is also maintained intact, integrating the Factor 4 and Factor 5 items. The Objective Management and Performance **competency** would be formed by all of the items from Factors 3 and 6. Finally, the Planning and Coordination **competency** integrates all of the items associated with Factor 2, except one item, which is moved to Conflict Resolution. Respondents were asked to rate statements related to **teamwork competency** (e.g., 'I plan my tasks effectively') using a 4-point response scale of frequency. Using university students for the sample, Cronbach's alpha for the total scale was found to be .89.

Format:
Responses for the 36 items are on a 4-point response scale of frequency (1 = never/almost never and 4 = always/almost always).

Administration Method:
Paper

Commercial Availability:
No

Permissions:

Release Date:
20141013
DOI:
10.1037/t33450-000
Test File:
Full
Accession Number:
9999-33450-000

APPENDIX C: EDITED TEAMWORK COMPETENCY TEST

Teamwork Competency Test – Edited for Clarity with Permission of Author

Please consider the numbered items below. Please mark your responses on the answer sheet attached. With each item:

Circle n/a if you have not had an experience with the circumstance or situation described.
Mark 1 – 10 if you <u>have</u> had an experience with the circumstance or situation described, with a "1" meaning that you have never acted (or would never act) in the way that the item suggests and a "10" meaning that you have always acted (or would always act) in a way that the items suggest.

1. When my work team is in conflict, I try to make it explicit to find solution pathways.

2. When I interact with my teammates, I ask questions to better understand what they mean.

3. When I disagree with others, I make an effort to focus on what we have in common.

4. I plan my tasks effectively.

5. I try to use the most appropriate team network to communicate the different types of information.

6. I often get involved in monitoring the task performance of other team members.

7. I recognize when an internal conflict exists because of a communication problem or misunderstanding.

8. I try to solve internal conflicts which exist because of a communication problem or misunderstanding by asking questions and listening to the people involved.

9. I look at people when they talk to me.

10. I modify my body language to show real interest in what people tell me.

11. I can easily recognize people's emotional states.

12. If someone in my team acts inappropriately, I talk privately with her/him.

13. If someone in my team acts inappropriately. I encourage the rest of the team to talk privately with her/him.

14. To address the trivial task-related issues, I do not need to talk first with all team members so we can reach a decision.

15. I make an effort to talk about less important things with my peers for the sake of team spirit.

16. I make an effort to talk about less important things with my peers for the sake of better internal communication.

17. I feel that having knowledge about people's skills and situation requirements is important.

18. I feel that having knowledge about people's skills and situation requirements is critical to assign tasks properly.

19. I feel that discussions without directions or guides can lead group members to make decisions that they would not make on their own.

20. When my personal interests are in conflict with others' interests, I am honest in the negotiation so that others understand my needs.

21. I make team conflicts explicit in a way that they can be solved.

22. I play an active role in team meetings by offering my opinions.

23. I play an active role in team meetings by asking questions.

24. I play an active role in team meetings by expressing my thoughts and ideas in a sincere and open way.

25. I help others in my team to make clear the roles and tasks they have to perform.

26. When I am upset about something, I express my discomfort to the group in a constructive way.

27. I provide my peers with feedback.

28. If something upsets me in my team I like to act in a positive way.

29. I establish milestones in my work team so that we can monitor our assigned tasks.

30. When I am involved in a team project. I care about having clear plans concerning the tasks and the timing to accomplish them.

31. During group meetings, regulation is necessary to ensure that all members provide their opinions.

32. During group meetings, regulation is necessary to ensure that all members avoid a situation that only a few participate actively.

33. I feel that when performing tasks in which one is an expert, the contributions made by other members are not that important.

34. In group decision meetings, it is more useful to promote cohesion and reach a majority of agreement, than to pay attention to divergent opinions.

35. I listen to my peer's opinions without evaluating their positions.

36. When working in a group, I say what I think in an open and sincere way.

37. I expect my peers to tell me the aspects of my work that they most dislike.

38. I talk with my peers without an objective, just for sharing time together.

39. It is important for me to monitor the tasks assigned to each team member.

40. I provide my peers with relevant information on how well I think the team tasks are progressing.

41. When doing my job, I prioritize the tasks most necessary for my teammates to complete their work.

42. I prioritize the tasks most necessary for my teammates to complete their work.

43. I ensure that my outputs match the inputs needed by my peers to perform their tasks.

44. For the sake of teamwork, I set objectives with moderate difficulty so that effort is needed to accomplish them.

Please place a four digit number identifier on this answer sheet in the box below. You will use this same number when you take this instrument at the end of the semester.

Circle n/a if you have not had an experience with the circumstance or situation described.
Mark 1 – 10 if you have had an experience with the circumstance or situation described, with a "1" meaning that you have never acted (or would never act) in the way that the item suggests and a "10" meaning that you have always acted (or would always act) in a way that the item suggests.

n/a 1)_____
n/a 2) _____
n/a 3) _____
n/a 4) _____
n/a 5) _____
n/a 6) _____
n/a 7) _____
n/a 8) _____
n/a 9) _____
n/a 10) _____
n/a 11) _____
n/a 12) _____
n/a 13) _____
n/a 14) _____
n/a 15) _____
n/a 16) _____
n/a 17) _____
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n/a 35) _____
n/a 36) _____
n/a 37) ____
n/a 38) _____
n/a 39) _____
n/a 40) _____
n/a 41) _____
n/a 42) _____
n/a 43) _____
n/a 44) _____

APPENDIX D: ORIGINAL STATEMENTS OF THE TWCT

Teamwork Competency Test Original Questions

Please respond to the following statements with the following 1 = never; 2 = almost never; 3 = almost always; 4= always

1. When my work team is in conflict, I try to make it explicit to find solution pathways.
2. When I interact with my teammates, I ask questions to better understand what they say.
3. When I disagree with others, I make an effort to focus on what we have in common instead of centering on what separates us.
4. I plan my tasks effectively.
5. I try to use the most appropriate team network to communicate the different types of information, avoiding the same formal procedure all the time.
6. I often get involved in monitoring the task performance of other team members.
7. When we face an internal conflict because of a communication problem or misunderstanding, I try to solve it by asking questions and listening to the people involved.
8. I look at people when they talk to me and I modify my body language to show real interest in what they tell me.
9. I can easily recognize people's emotional states by observing their nonverbal messages.
10. If someone in my team acts inappropriately, I talk privately with her/him, encouraging the rest of the team to do the same.

11. To address the trivial task-related issues, I do not need to talk first with all team members so we reach a decision.
12. I make an effort to talk about less important things with my peers for the sake of team spirit and better internal communication.
13. Having knowledge about people's skills and situation requirements is critical to assign tasks properly.
14. Discussions without directions or guides can lead group members to make decisions that they would not make on their own.
15. When my personal interests are in conflict with others' interests, I tend to be honest in the negotiation so that others understand my needs.
16. I care an act to make team conflicts explicit in a way that they can be solved.
17. I play an active role in team meetings by offering my opinions, asking questions, and expressing my thoughts and ideas in a sincere and open way.
18. I often help others in my team to make clear the roles and tasks they have to perform.
19. When I am upset about something, I express my discomfort to the group in a constructive way, asking for solution alternatives.
20. I like to provide my peers with feedback about what they do and to assess the value of their work.
21. If something upsets me in my team, I do not like to act as if nothing has happened.
22. I try to establish milestones in my work team so that we can monitor our assigned tasks.
23. When I am involved in a team project, I care about having clear plans concerning the tasks in the timing to accomplish them.

24. During group meetings, regulation is necessary to ensure that all members provide their opinions and to avoid that only a few participate actively.
25. When performing tasks in which one is an expert, the contributions made by other members are not that important.
26. In group decision meetings, it is more useful to promote cohesion and reach a majority of agreement, then to pay attention to divergent opinions.
27. I tried listing to my peer's opinions without evaluating their positions as good or bad.
28. When working in a group, I say what I think in an open and sincere way.
29. I expect my peers trust enough to tell me the aspects of my work that they most dislike.
30. I sometimes talk with my peers without an objective, just for sharing a while together.
31. It is important for me to monitor the tasks assigned to each team member.
32. I provide my peers with relevant information on how well I think the team tasks are progressing.
33. When doing my job, I prioritize the tasks most necessary for my teammates to complete their work.
34. I try to ensure that my outputs match the inputs needed by my peers to perform their tasks.
35. For the sake of teamwork, I said objectives with moderate difficulty so that effort is needed to accomplish them.
36. I often provide my peers with feedback on their task performance

APPENDIX E: TEAMWORK STATEMENTS AND COMMUNICATION STATEMENTS OF THE TGWCT

Teamwork statements include:

1. When my work team is in conflict, I try to make it explicit to find solution pathways.
3. When I disagree with others, I make an effort to focus on what we have in common.
4. I plan my tasks effectively.
5. I try to use the most appropriate team network to communicate the different types of information.
6. I often get involved in monitoring the task performance of other team members.
7. I recognize when an internal conflict exists because of a communication problem or misunderstanding.
8. I try to solve internal conflicts which exist because of a communication problem or misunderstanding by asking questions and listening to the people involved.
9. I look at people when they talk to me.
10. I modify my body language to show real interest in what people tell me.
12. If someone in my team acts inappropriately, I talk privately with her/him.
13. If someone in my team acts inappropriately. I encourage the rest of the team to talk privately with her/him.
14. To address the trivial task-related issues, I do not need to talk first with all team members so we can reach a decision.
15. I make an effort to talk about less important things with my peers for the sake of team spirit.
16. I make an effort to talk about less important things with my peers for the sake of better internal communication.

17. I feel that having knowledge about people's skills and situation requirements is important.

18. I feel that having knowledge about people's skills and situations requirements is critical to assign tasks properly.

25. I help others in my team to make clear the roles and tasks they have to perform.

26. When I am upset about something, I express my discomfort to the group in a constructive way.

27. I provide my peers with feedback.

28. If something upsets me in my team I like to act in a positive way.

29. I establish milestones in my work team so that we can monitor our assigned tasks.

30. When I am involved in a team project. I care about having clear plans concerning the tasks and the timing to accomplish them.

33. I feel that when performing tasks in which one is an expert, the contributions made by other members are not that important.

34. In group decision meetings, it is more useful to promote cohesion and reach a majority of agreement, than to pay attention to divergent opinions.

35. I listen to my peer's opinions without evaluating their positions.

36. When working in a group, I say what I think in an open and sincere way.

37. I expect my peers to tell me the aspects of my work that they most dislike.

39. It is important for me to monitor the tasks assigned to each team member.

42. I prioritize the tasks most necessary for my teammates to complete their work.

43. I ensure that my outputs match the inputs needed by my peers to perform their tasks.

Communication statements include:

2. When I interact with my teammates, I ask questions to better understand what they mean.

11. I can easily recognize people's emotional states.

19. I feel that discussions without directions or guides can lead group members to make decisions that they would not make on their own.

20. When my personal interests are in conflict with others' interests, I am honest in the negotiation so that others understand my needs.

21. I make team conflicts explicit in a way that they can be solved.

22. I play an active role in team meetings by offering my opinions.

23. I play an active role in team meetings by asking questions.

24. I play an active role in team meetings by expressing my thoughts and ideas in a sincere and open way.

31. During group meetings, regulation is necessary to ensure that all members provide their opinions.

32. During group meetings, regulation is necessary to ensure that all members avoid a situation that only a few participate actively.

38. I talk with my peers without an objective, just for sharing time together.

40. I provide my peers with relevant information on how well I think the team tasks are progressing.

41. When doing my job, I prioritize the tasks most necessary for my teammates to complete their work.

44. For the sake of teamwork, I set objectives with moderate difficulty so that effort is needed to accomplish them.

APPENDIX F: MTCC HISTOGRAMS FOR COMMUNICATION AND TEAMWORK PRETEST (AUGUST) AND POSTTEST (DECEMBER)