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Pepperdine University
Graduate School of Education and Psychology

A STUDY OF POSTSECONDARY COMPETENCY-BASED EDUCATION PRACTICES IN
THE CONTEXT OF DISRUPTIVE INNOVATION THEORY

A dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Education in Organizational Leadership

by

Christopher Mallett

July, 2016

Kay Davis, Ed.D. – Dissertation Chairperson

This dissertation, written by

Christopher Mallett

under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

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DEDICATION

This work is dedicated to my wife Charlet and to our three children: Andrew, Benjamin, and Nicholas. Your love, patience, enthusiasm, and support always inspire and encourage me to be my best. That's been especially true as I've worked through my doctoral coursework and this dissertation. You've each made sacrifices so that I could pursue these interests. I am grateful for this and love you all very much.

ACKNOWLEDGMENTS

I would like to acknowledge and thank members of my dissertation committee, Dr. Jack McManus and Dr. Paula Thompson, for their time, active participation, and investment in this research and in my own scholarly development. Dr. McManus' passion for education innovation and Dr. Thompson's pragmatic and sound methodological advice have both inspired and helped me to create an effective study.

I would like to also acknowledge the support of my colleagues at both Western Governors University and Northeastern University for their long-time friendships and professional collaboration. I consider myself lucky to have had the opportunity to work with, and learn from, such phenomenal people in pursuit of our worthy and important endeavors. I am appreciative of you all in ways that I've not fully expressed.

Finally, I would like to particularly acknowledge and offer a heartfelt "thank you!" to my dissertation chairperson, Dr. Kay Davis. Your flexibility, availability, creativity, and sharp insight have helped me to design and – more importantly – to complete this project. You were supportive, patient, and yet firm in your expectations in ways and at times that really mattered. I am grateful for your help and support, Kay.

Associate Provost, Product Development Feb. 2013 – Present

Responsibilities & Results

- Collaborated with other university leaders to envision, implement, and continuously improve degree programs.
- Ensured the quality and appropriateness of program competencies, courses, and assessments to enable competency development and successful learning.
- Used rich, diverse product and student outcomes data to prioritize and continuously improve the performance of 60 degree programs, 600 courses, and 1,200 assessments.
- Led 95 product development faculty members consistent with WGU's promise to create a meaningful, enjoyable, rewarding work experience for all employees.
- Managed resources in a fiscally responsible way; improved operational efficiencies and the university's ability to scale in support of aggressive growth.

Associate Provost, Faculty Mentoring Jan. 2007 – Feb. 2013

Responsibilities & Results

- Led a distributed team of 60 managers and more than 800 full-time faculty mentors who advised, directed, and provided subject matter support to 40,000 online students.
- Met or exceeded annual student outcomes goals (e.g., academic progress, retention, graduation, student satisfaction) every year in role, helping more than 25,000 WGU graduates to achieve their dreams for degree and career success during this time.
- Developed scalable, efficient student service strategies that have positioned WGU's faculty mentoring model for sustained, rapid growth and development.
- Responsible for the hiring, supervision, training, and performance of all faculty members. Established and continuously improved all policies and procedures.
- Hired, coached, and developed a strong cadre of "high potential" employees, many of whom have subsequently assumed significant leadership positions within the university.

Director of Enrollment

Jul. 2001 – Jan. 2007

Responsibilities & Results

- Led a team of 50 managers, enrollment counselors, and financial aid representatives to academically advise, recruit, serve, and enroll prospective WGU students.
- Met or exceeded aggressive enrollment goals every year in role, collaborating with others to drive 35% year-over-year growth from 2002 through 2007.

- Designed and led a high volume, phone-based, consultative sales environment.
- Collaborated with others to design, develop, and implement WGU's prospect management and recruitment system.
- Responsible for the hiring, supervision, training, and performance of all department members. Established and continuously improved all policies and procedures.
- Hired, coached, and developed a strong cadre of "high potential" employees, several of whom have subsequently assumed significant leadership positions within the university.

Interests

My wife and I are the proud parents of three young boys. Together, we spend the majority of our free time supporting their interests in education and competitive sports. We enjoy the outdoors and travel as a family often within our country's national parks, in our beloved Utah, and along the California coast. We are New England newcomers and have recently enjoyed the opportunity to explore its unique history, places, and culture.

ABSTRACT

The American public's interests are well-served by a strong, effective postsecondary education system. And yet the industry's predominant learning and service paradigm, one that credentials learning by measuring student's time on task and that treats all learners largely the same from a pacing and a requirements perspective is inconsistent with the realities, circumstances, and expectations of 21st century students. Competency-based education, with its emphasis on the attainment of mastery through the measurement of learning, not time, and its focus on operational efficiency and effectiveness, has the potential to evolve and shape the postsecondary education industry by introducing simplicity, convenience, accessibility, and affordability where complication and high cost are the status quo.

The purpose of this qualitative, exploratory study was to understand and describe the competency-based education practices of American higher education institutions within the context of Christensen's theory of disruptive innovation. The practices and programs of eight institutions that offer accredited, competency-based certificate and degree programs were examined. An exploratory, qualitative review of publically available artifacts that describe the competency-based approaches employed by these eight institutions provided the primary data for this study. Prominent industry reports on competency-based education published from September 2014 through January 2016 were examined and are described. The researcher's professional responsibilities and observations while engaged in the design and delivery of competency-based programming also informed this study.

Specific characteristics, practices, and two distinct methods for the delivery of competency-based education were identified and are described. Consistent mission, tuition, and student demographic realities were found to exist among the examined institutions and are

discussed. Variable findings related to program design practices, the nature of assessment, the role of faculty, and provider-specific outcomes emerged and are also presented. The current state of the practice was found to be consistent with Christensen's theory of disruptive innovation. The practice was further found to be workforce aligned but only minimally deployed within the postsecondary education industry. Characteristics of examined programs were found to be non-distinct. Program evaluation criteria and outcomes were determined to be unclear at this time.

Chapter 1. Study Introduction

The American public's interests are well-served by a strong, effective postsecondary education system. And yet the industry's predominant learning and service paradigm, one that credentials learning by measuring student's time on task and that treats all learners largely the same from a pacing and a requirements perspective (Mendenhall, 2013), is to some degree inconsistent with the realities, circumstances, and expectations of 21st century students. That paradigm "doesn't work for adults who are juggling jobs, family, and other priorities while they work toward a degree – an elaborate dance that too often ends in students leaving school with no degree, but lots of debt" (Greenstein, 2013, para. 2). The traditional paradigm may be failing many of the institutions that promulgate it as well. The vast majority of American colleges and universities – those that enroll students from regional markets and those that face significant competition – are under increasing pressure to create an affordable, effective college experience in order to compete and remain in business (Bogaty, 2013).

Innovative solutions must emerge from the public policy arena, from the business sector, and most importantly, from within the nation's postsecondary institutions themselves (Greenstein, 2013). Competency-based education, with its emphasis on the measurement of learning, not time, (Mendenhall, 2003, 2012) and its focus on operational efficiency and effectiveness, has the potential to evolve and shape the industry as a disruptive innovation that can introduce "simplicity, convenience, accessibility, and affordability where complication and high cost are the status quo" (Clayton Christensen Institute, 2014, para 2).

The purpose of this exploratory, qualitative study is to understand and describe the current competency-based education practices of American higher education institutions within the context of Christensen's (1997) theory of disruptive innovation.

The prosperity of America and its people are inextricably linked to the level of education, competency, and preparedness of the nation's workforce (Berger & Fisher, 2013; *Innovations in College Affordability*, 2012; Obama, 2009; The White House Office of the Press Secretary, 2013). For many Americans, educational attainment, creativity, and social skills will determine their ability to command viable, meaningful employment as technological innovation changes the nature of work (Frey & Osborne, 2013). The pre-requisite to a 21st century citizen's economic opportunity is an earned, high quality college degree (Carnevale, Smith, & Strohl, 2010; Obama, 2009; The White House Office of the Press Secretary, 2013). A secondary-level education no longer provides sufficient training and standing to compete for quality, high paying jobs in markets that are complex and information-based (Duncan, 2011; Levenson, 2010; McPherson & Shulenburger, 2009).

With competition for tomorrow's jobs and markets increasingly global, technologically efficient, and qualified, it is imperative that more Americans improve their personal readiness, standing, and economic opportunity through access to high quality postsecondary education and successful degree attainment (Lumina Foundation, 2012; U.S. Department of the Treasury & U.S. Department of Education, 2012). According to Georgetown University's Center on Education and the Workforce (Carnevale et al., 2010), 59% of all U.S. jobs required postsecondary education in 2008. It is expected that 63% of all U.S. jobs will require postsecondary education by 2018. Two Oxford University economists (Frey & Osborne, 2013) have suggested that up to 47% of today's U.S. jobs may be eliminated due to advances in computerization through 2033. The implications of these findings suggest that those who cannot earn a postsecondary degree may struggle as the nature of work evolves and employers favor workers who have earned postsecondary degrees and other credentials.

The transformational power of a postsecondary education is well established. A strong correlation exists among educational attainment, economic productivity, employment rates, and median wages (Berger & Fisher, 2013; Decker, Rice, Moore, & Rollefson, 1997; U.S. Department of the Treasury & U.S. Department of Education, 2012). College graduates tend to realize a return on their tuition and time investment through increased earnings and overall employability over time (National Center for Education Statistics, 2014b; U.S. Department of Labor Bureau of Labor Statistics, 2014). The National Center for Education Statistics has reported that the median annual salary of workers who held a bachelor's degree, ages 25 – 34, in 2012 was \$46,900. The median annual salary of those who had only completed high school at the time was just \$30,000 (National Center for Education Statistics, 2014b). The U.S. Department of Labor's Bureau of Labor Statistics (2014) has reported that the unemployment rate among bachelor's degree holders during 2013 was 4.0%, compared to a national average at the time of 6.1%. Unemployment among those who had earned a master's degree was even lower at just 3.4%. In contrast, the bureau reported that unemployment among those who had only completed high school in 2013 was 7.5%.

Many Americans have experienced that the return on investment for those who enroll, persist, and complete a college degree is strong (Autor, 2014; Leonhardt, 2014) Enrollment in postsecondary institutions has surged to unprecedented levels in recent years (Bogaty, 2013; The Lawlor Group, 2013). Total postsecondary enrollment at degree-granting institutions will exceed 22 million students by 2016 (National Center for Education Statistics, 2014c). And yet, student outcomes data suggest that many of America's colleges and universities have failed to meet the degree attainment expectations of their students (Shapiro et al., 2014; Symonds, Schwartz, & Ferguson, 2011). Those students who are able to graduate often leave college with substantial

student loan debt – the consequence of a time-consuming and expensive learning experience (Bogaty, 2013; Lee, 2013; Symonds et al., 2011).

The U.S. Census Bureau (2013) has reported that approximately 35 million Americans ages 25 years old and older had some college experience but no earned college credential to show for their efforts in 2013. The National Student Clearinghouse Research Center (Shapiro et al., 2014) found that, during the past 20 years, more than 31 million Americans enrolled and then left college before earning a degree or certificate. According to Harvard University's Graduate School of Education, just 56% of postsecondary students are able to earn a bachelor's degree within 6 years of their initial enrollment. Among community college students, less than 29% are able to earn an associate's degree within three years (Symonds et al., 2011). Through 2013, just 45% of young Americans, ages 25 to 34 had attained a college degree at the level of an associate's degree or higher (U.S. Census Bureau, 2013).

The Higher Education Milieu

More than 4,500 accredited, degree granting postsecondary institutions exist in America (National Center for Education Statistics, 2014a). The scope and impact of this higher education milieu extends beyond the institutions themselves to the students and communities the institutions serve. The American higher education industry serves more than 22 million students (National Center for Education Statistics, 2014c). In many states, postsecondary institutions are among the largest employers. In 2009, revenues at America's higher education institutions represented 3.6% of the nation's gross domestic product. The nation's postsecondary institutions employed 3.7 million workers, a figure that represented 2.4% of the total American labor force (U.S. Department of the Treasury & U.S. Department of Education, 2012).

A variety of external forces have prompted the competitive landscape and traditional practices of American higher education to shift in recent years (Christensen & Eyring, 2011). For-profit and career college market entrants have emerged (Blaustain, Goldstein, & Lozier, 1998; U.S. Department of Education, 2011) and have enrolled hundreds of thousands of American students (U.S. Department of Education, 2011; U.S. Senate Committee on Health, Education, Labor, and Pensions, 2012). Programs and courses offered at night, on weekends, online, and in blended delivery formats have provided students with a variety of access and service options from which to choose. At the same time, diverse student demographics and circumstances (The Lawlor Group, 2013; U.S. Department of Education, 2011), tuition and student loan debt pressure (Bogaty, 2013; Lee, 2013) and political realities (Mortenson, 2013) have evolved in ways that have changed the economics of the industry (Denneen & Dretler, 2014; Lapovsky, 2013). The competition for student enrollment and the revenue it generates among colleges and universities is significant (Bogaty, 2013). These circumstances have created pressure on many postsecondary institutions to either evolve or perish (Denneen & Dretler, 2014; Lapovsky, 2013).

Diverse student demographics and circumstances. Today's college students are diverse in both their needs and circumstances (U.S. Department of Education, 2011). Transfer from one institution to another, a circumstance that represents the discontinuous nature of postsecondary learning for many Americans, is common (The Lawlor Group, 2013). Many students have a start, stop, and then start again relationship with their colleges and universities. More than 31 million Americans enrolled and then left college before earning a degree or certificate (Symonds et al., 2011) during the past 20 years. Transfer among institutions for those who do complete college is common. One in four high school graduates who enrolled in college

for the first time during 2006 eventually completed their degrees at an institution other than the one they enrolled with initially. One in three of all college students who began college in 2006 transferred at least once within 5 years (The Lawlor Group, 2013).

Total postsecondary enrollment at degree-granting institutions is expected to exceed 22 million students by 2016 (National Center for Education Statistics, 2014c). More women than men are presently enrolled with 45% of women ages 18 to 24 enrolled in postsecondary degree programs compared to just 39% of men from the same age group. Hispanic students ages 18 to 24 accounted for 16.5% of all postsecondary enrollment in 2011. Enrollment among all Hispanic students is projected to increase 27% through 2019. Overall college and university enrollment is projected to increase 5% among 18 to 24 year olds, 16% among 25 to 34 year olds, and 17% among students 35 years old and older through 2020. (The Lawlor Group, 2013).

Business model sustainability. The success and sustainability of the nation's postsecondary institutions are essential to its economy in terms of workforce development and the career preparedness of students. The health and viability of the nation's colleges and universities are also important from the perspective of job creation and the opportunities these institutions provide for their employees and communities. And yet the health, vitality, and sustainability of America's colleges and universities are under pressure and in question (Lapovsky, 2013). In fact, industry circumstances are such that Moody's Investors Service revised its economic evaluation and forecast for the entire higher education sector to negative in 2013 (Bogaty, 2013).

Denneen and Dretler (2014) found that the nation's early 21st century economic recession had a dramatic and negative impact on the endowments and state-sponsored support of many postsecondary institutions, severely limiting cash flow and prompting intense budget

pressure. At many postsecondary institutions, equity relative to total institutional assets has decreased in recent years. At the same time, expenses relative to total revenue have increased. Most institutions sought to address these financial challenges by generating more revenue through increased tuition. And as a result, average tuition among the nation's colleges and universities expressed as a percentage of Americans' median annual earnings increased 14.5% from 2001 to 2010. Compounding this pressure, Americans' median annual earnings decreased \$12,662 per year, or 18.5% during the same years. The economics and potential implications of these circumstances are serious.

Tuition and student loan debt. American student loan debt has increased substantially during the past decade as students and families have sought to keep pace with the increasing cost of college by financing their postsecondary education. Tuition and fees among public four-year institutions increased, on average, 4.2% annually during the past decade (The College Board, 2014a). Among for-profit universities, average tuition and fees are more than \$15,000 per year. Average tuition and fees among private, nonprofit four-year institutions now exceed \$30,000 per year (The College Board, 2014b). While demand for higher education has remained strong, students and families are increasingly sensitive to the cost of college as they have seen both their personal net worth and home values depressed in recent years (Bogaty, 2013).

Americans' total student loan debt now exceeds one trillion dollars (Bogaty, 2013). Lee (2013) found that student loan debt tripled in just 8 years, between 2004 and 2012, driven by a 70% increase in the number of borrowers and a corresponding 70% increase in the average, per person debt balance. Student loan debt is the only type of debt that continued to rise following the nation's economic collapse of 2009. Today, student loan debt is the second largest type of debt Americans carry, trailing only mortgage debt.

Americans' student loan debt increased across all age groups during the past decade. Lee (2013) suggested that such growth has been driven by four key factors. First, enrollment increased dramatically across all higher education sectors during the first decade of the 21st century (Bogaty, 2013; National Center for Education Statistics, 2014c). Second, the rising cost of tuition relative to Americans' earnings (Denneen & Dretler, 2014) has prompted parents of college-going students to incur more student loan debt than parents had typically incurred in years' past. Third, both time-to-degree-completion and graduate program enrollment numbers have increased steadily. And fourth, low repayment terms have kept student loan balances high (Lee, 2013).

The student loan data, disaggregated by age group, vividly illustrate the impact of all this borrowing. In 2004, 27% of American 25 year olds carried student loan debt. By February 2013, 43% of the same demographic group held student loans. Approximately 39 million Americans held student loan debt as 2013 began. The average balance per borrower was approximately \$25,000. Forty percent of these borrowers held balances less than \$10,000 while 47.5% carried balances between \$10,000 and \$50,000. More than 12% held debt balances greater than \$50,000 (Lee, 2013).

The rising cost of college has required students and families to incur more debt. Americans with high student loan debt may be limited in their ability to secure other types of credit. And while higher education is still seen by many as a pathway to economic prosperity (Autor, 2014; Leonhardt, 2014), there may be a tuition ceiling beyond which students and their families cannot or will not pass. Moody's Investors Service has argued that universities that attract the most qualified domestic and international students may be able to continue to set tuition at rates appropriate to maintain budgets and drive innovation, growth, and quality. But the

vast majority of colleges and universities – those that enroll students from regional markets and those that face significant competition – will face increasing pressure to create an affordable college experience in order to compete and remain in business. They cannot count on their ability to raise tuition indefinitely in order to cover expenses (Bogaty, 2013). This suggests an urgent need for institutions to innovate in ways that improve operational efficiencies, limit expenses, and develop new or improved sources of revenue.

Political realities. Public awareness and scrutiny of these demographic, tuition, and debt realities has contributed to a climate of political pressure. Postsecondary institutions have increasingly been expected to prove their value. Some have been restricted in their ability to generate new revenues through tuition increases and have encountered limits on taxpayer support (Bogaty, 2013). Calls for higher education reform among state legislatures and governors have been increasingly focused on outcomes and an expected return on investment (Lewin, 2013).

In 2011, Texas Governor Rick Perry challenged all state supported institutions to offer bachelor's degrees that could be earned for \$10,000 or less (Haurwitz, 2011). In 2011, Florida Governor Rick Scott sought to tie state support of higher education to the job prospects associated with specific majors. Scott said "I want that money to go to degrees where people can get jobs in this state" (Anderson, 2011, para. 6). In 2014, Arizona Governor Jan Brewer announced a plan that would shift state funding to those postsecondary institutions that achieved the best outcomes. Brewer said "that means we stop funding the status quo and instead reward innovation and measure outcomes and fund the results we want" (Fischer, 2014, para. 12).

Other political realities have shaped the public's perception and expectations of higher education institutions. Reduced tax revenues and the resulting budget pressures states felt during the recession in the early part of the 21st century contributed to dramatic declines in state support

for higher education. The American Council on Education (Mortenson, 2012) has reported that states cut support for their postsecondary institutions in the range of 15% to 69% during the last decade. Seven states, Vermont, Virginia, Montana, Minnesota, Oregon, Arizona, Rhode Island, South Carolina, and Colorado reduced their investments in public institutions by 51% or more. Mortenson (2012) argued that, when faced with such cuts, colleges and universities must trim programs, services, personnel, and/or increase tuition in order to maintain budgets. Many, Mortenson said, have elected to do all of the aforementioned. A comparison of tuition over time suggests that tuition increases have been aggressive across all sectors of the higher education industry. Tuition at state flagship universities has increased 247% since 1980. Tuition at state universities and community colleges increased by 230% and 164%, respectively, during the same period of time.

The Case for Change

The American public's interests are clearly well served by a strong, effective postsecondary education system. The nation's economic future and the prosperity of its citizens depend on its ability to develop a highly qualified, educated workforce (Berger & Fisher, 2013; Carnevale et al., 2010; Frey & Osborne, 2013; *Innovations in College Affordability*, 2012; Obama, 2009; The White House Office of the Press Secretary, 2013). And yet, the industry's traditional learning paradigm, one that credentials learning by measuring students' time on task and that treats all learners largely the same from a pacing and a requirements perspective (Mendenhall, 2003, 2012), has been described as inconsistent with the realities of 21st century students (Ganzglass, Bird, & Prince, 2011; Klein-Collins, 2012; Soares, 2012).

The nation's postsecondary student outcome data suggest ample room for improvement. The United States ranks sixth in postsecondary attainment among the world's working age

people, those ages 25 to 64. In 2012, the most recent year global education attainment comparisons were available, 39.4% of Americans ages 25 to 64 had earned an associate's degree or higher-level credential. When disaggregated to reveal attainment among the world's 25 to 34 year-old populations, the degree attainment data reveal that The United States ranks eleventh with 40.9% of those ages 25 to 34 having earned an associate's degree or higher-level credential (Lumina Foundation, 2014c).

Influential American foundation and policy leaders have recognized and taken steps to address the nation's serious degree attainment and college sustainability challenges. The Lumina Foundation, a top 40 private foundation in terms of invested financial assets, has worked "to increase the proportion of Americans with high quality degrees and credentials to 60 percent by the year 2025" (Lumina Foundation, 2014b, para. 1). In support of this goal, Lumina contributed more than \$30 million through 70 grants in 2012. Its grant-making and organizational strategy is two-fold. First, Lumina supports initiatives that mobilize action among higher education stakeholders. Second, the foundation supports initiatives that have potential to contribute to the higher education system in a manner that prioritizes learning, not time. The foundation places particular emphasis on its support of financing and credentialing models (Lumina Foundation, 2014a).

Lumina's President and CEO, Jamie Merisotis, characterized the mission of the foundation and described the key challenges facing postsecondary institutions as follows:

We cannot have a stronger nation unless we build that strength through higher education. . . . Access is not sufficient, and we simply cannot be satisfied to stop there. We must do all we can – more than ever before – to ensure that opportunity leads to attainment. The data are inescapable, and the trends are clear and sobering. If we hope to thrive in the

21st century global economy – an economy in which college-level learning has become the ticket to entry into the middle class – millions more Americans must earn postsecondary degrees, certificates, and other credentials. (Merisotis, 2013, para. 7)

The Bill and Melinda Gates Foundation has worked in support of its goal to “ensure that all low-income adults have affordable access to a quality postsecondary education that is tailored to their individual needs and education goals and leads to timely completion of a degree or certificate with labor-market value” (Bill & Melinda Gates Foundation, 2014, para. 5). The foundation contributed a total of \$472 million through 2012 to fund higher education initiatives consistent with this goal. Support for postsecondary education remains a key area of the foundation’s focus. Its grant-making and organizational strategy for 2013 and beyond will include four areas of emphasis: college readiness, personalized learning, performance measures, and research and advocacy (Bill & Melinda Gates Foundation, 2014).

Daniel Greenstein directs the Gates Foundation’s postsecondary success strategy. Greenstein (2013) characterized the mission of the foundation and suggested that innovation is the key to helping postsecondary institutions improve performance:

The current system doesn’t work for adults who are juggling jobs, family, and other priorities while they work toward a degree – an elaborate dance that too often ends in students leaving school with no degree, but lots of debt . . . These challenges, and the need for a fix, are nearly universally acknowledged – especially as the cost of postsecondary education continues to rise. That’s why we’re listening and learning from partners from across the higher education sector to help identify how to provide high quality degrees more affordably to students . . . We need to support and encourage these thoughtful innovators, and help them articulate what we know to be true: that innovation

is a means of increasing the value of higher education and improving its impact and ability to improve student lives. (para. 3)

These issues have commanded attention from the highest levels of American government. During his first term in office, President Barack Obama established and announced a degree attainment goal that 60% of American 25-to-64 year olds would possess a college degree by the year 2020. The President specifically called for policy, political, institutional, and personal commitment in support of this aggressive goal. He challenged every American to embrace this goal during his first State of the Union address in February 2009:

It is our responsibility as lawmakers and educators to make this system work. But it is the responsibility of every citizen to participate in it. And so tonight, I ask every American to commit to at least one year or more of higher education or career trainings. This can be community college or a four-year school; vocational training or an apprenticeship. But whatever the training may be, every American will need to get more than a high school diploma . . . this country needs and values the talents of every American. That is why we will provide the support necessary for you to complete college and meet a new goal: by 2020; America will once again have the highest proportion of college graduates in the world. (Obama, 2009, para. 66)

The work and financial support of organizations like the Lumina and Gates foundations, the President's call, the economic realities of the times, various policy initiatives, and the access, persistence, and student success initiatives employed by the nation's postsecondary institutions contributed to a dramatic, 32% increase in overall enrollment at degree-granting institutions from 2001 to 2011. The percent of students enrolled full-time during this time increased 38%, while the number of part-time students increased 23%. Enrollment among 18 to 24 year olds increased

11% to 31.1 million; 42% of all American 18 to 24 year olds were enrolled in a college or university in 2011 (National Center for Education Statistics, 2014c). But despite such high level, renewed, creative, and focused attention, the most recent U.S. Census Bureau projections suggest that just 46.4% of Americans will have achieved an associate's degree, or higher, by the year 2020 (Lumina Foundation, 2012). The gap between this projection and President Obama's ambitious goal is additional 24 million earned degrees.

These are not just student success and cost of college issues. Postsecondary degree attainment is essential to the American economy. The nation's colleges and universities are counted upon to prepare Americans to fill and keep jobs that drive the nation's economic health and prosperity. America's employers began 2014 with four million vacant jobs. The number of monthly American job vacancies remained largely unchanged at four million jobs during all of 2013. As of July 2014, the number of unfilled jobs had increased dramatically as the nation's employers sought to fill 4.7 million vacant jobs (U.S. Department of Labor, 2014a). Despite a persistent plethora of available jobs, the nation's seasonally adjusted unemployment rate remained high at 6.7% as 2014 began. The rate had not been that low since October 2008 – and it had been as high as 10% in October 2009 – but remained 2.3% higher than the previous decade's best of 4.4%.

The circumstances described previously suggest that the case for change is clear. In order for the nation to bridge its 24 million degree attainment gap (Lumina Foundation, 2012), promote the vitality and sustainability of its postsecondary education institutions (Lapovsky, 2013), help the nation's employers to fill vacant jobs (U.S. Department of Labor, 2014a), and prepare American citizens to compete in a 21st century global marketplace (Carnevale et al., 2010; Frey & Osborne, 2013), innovative higher education solutions must emerge (Greenstein,

2013; Merisotis, 2013; Obama, 2009). Innovative solutions must emerge from the public policy arena, from the business sector, and most importantly, from within the nation's postsecondary institutions themselves (Greenstein, 2013).

Disruptive Innovation for Higher Education

Education is a human endeavor. The methods, environments, and circumstances that can propel people to learn effectively are as varied and diverse as humans themselves. A strong demand for campus-based, liberal arts, and research institutions exists and will continue. The nation's community colleges serve students who may be balancing education, work, and family commitments or who simply prefer the choice and convenience such institutions offer (Schneider & Yin, 2012). Online education – now ubiquitous among postsecondary institutions – has the potential to provide efficient, effective learning environments for students who cannot easily access campus-based classrooms or who prefer the flexibility of an online approach (Allen & Seaman, 2013; Means, Toyama, Murphy, Bakia, & Jones, 2010). Blended-learning paradigms hold great promise (Means et al., 2010). All of these approaches represent innovations for higher education that have the potential to personalize and scale the learning experiences of students (Bill & Melinda Gates Foundation, 2014). All have the potential to be deployed in affordable, sustainable ways. And all of these approaches, deployed together with new initiatives as yet unknown, will be necessary if the nation is to improve the quality of its postsecondary education and achieve its degree attainment goals (Greenstein, 2013).

President Obama (2009) has outlined an ambitious higher education access and affordability agenda that includes among its strategies a call for increased competition and innovation, particularly in the use of technology, and “cutting-edge college practices for providing high value at low costs” (The White House Office of the Press Secretary, 2013,

para. 3). The President described a variety of innovations recently observed to hold potential in the higher education milieu and specifically identified competency-based education as a particularly promising practice “known to offer significant breakthroughs on cost, quality, or both” (para. 12).

Consistent with the President’s support for competency-based education, the U.S. Department of Education (2014b) announced that it will use its experimental sites initiative to allow eligible colleges and universities to award federal financial aid for competency-based education programs. The department uses experimental sites initiatives to test the flexibilities and effectiveness of various federal financial aid policies in the context of certain circumstances (U.S. Department of Education, 2014c). The day after the department announced its competency-based experimental sites initiative, a bill that would create a competency-based demonstration program was unanimously passed in the U.S. House of Representatives. That bill (H.R. 3136, 2014), which has been endorsed by President Obama, would amend the Higher Education Act of 1965 to allow approved institutions to offer competency-based education using methods that would not otherwise comply with existing federal financial aid regulations. Like the experimental sites initiative, the intent of the bill is to encourage and permit postsecondary education institutions to explore competency-based education methods.

Competency-based education. Competency-based education practices measure learning, not time (Mendenhall, 2003, 2012). Competency-based education “is an outcomes-based approach to education where the emphasis is on . . . what graduates know and can do” (Soares, 2012, p. 2). Competency-based methods ensure quality and assess learning by objectively measuring students’ understanding of prescribed competencies and their ability to apply required knowledge, skills, and abilities (Center for American Progress, 2012a). Assessment methods are

typically deployed independent of a student's time on task or source of competency development. As such, competency-based education practices have the potential to accelerate time to degree completion, increasing both learner and institution effectiveness and reducing costs as compared to other methods (Center for American Progress, 2012a; Mendenhall, 2003, 2012).

Competency-based education practices have the potential to personalize and accelerate students' learning experiences by freeing learners from the prohibitive boundaries of place and time that dominate the traditional higher education landscape (Mendenhall, 2003, 2012).

Coupled with the use of Internet delivery, the approach has the potential to level the education playing field across demographics and allow learners of all types, abilities, and circumstances to access and demonstrate success independent of time, place, or source of learning. Because the cost to develop, deliver, and maintain competency-based education programs is reasonable, institutions may be able to price such programs affordably, allowing graduates to achieve high quality education at costs they can afford (Klein-Collins, 2012).

Competency-based education holds the learner central to a process that honors the worth and experiences of the individual and the integrity of all involved. In-depth study, whether guided by the expertise of faculty or offered independent of faculty experts through independent learning resources, can afford students the opportunity to slow down, to fully invest, or to take more time with challenging or fascinating course material (LeBlanc, 2013; Mendenhall, 2003, 2012, 2013). Conversely, students who possess prior training or significant experience with particular competencies may elect to move efficiently through requirements where appropriate (Voorhees, 2001). The use of rigorous, high stakes assessments ensures that learning has actually occurred and can be both measured and reported (Klein-Collins, 2012; Mendenhall, 2003, 2012; Voorhees, 2001).

The practice's emphasis on outcomes, not inputs, allows learners to select from learning resources and experiences most appropriate to their circumstances and learning style. The Georgetown Center on Education and the Workforce estimated that nearly 21 million students enrolled in non-credit courses during 2009, a number that represented 49% of all postsecondary enrollment. Thirteen million of these 21 million non-credit students were enrolled in accredited 2- and 4-year institutions; 8 million were enrolled in training programs offered by associations, employers, or the like. But because all of these students were enrolled in non-credit courses, few of their experiences could contribute to their ability to earn a degree. In effect, their non-credit learning "leads to no credential at all" (Ganzglass et al. 2011, p. 5). Because competency-based education can be source-, setting-, and time-of-learning agnostic (LeBlanc, 2013; Mendenhall, 2003), it has the potential to provide credentialing solutions for students like these and others who seek to leverage experience and prior learning in their pursuit of a high quality postsecondary credential. It also has the potential to help colleges and universities innovate in ways that may improve student outcomes, reduce costs, and promote institutional sustainability (Klein-Collins, 2012).

Disruptive innovation theory. Christensen (1997) examined companies that had failed to retain top positions in their industries when confronted with innovative competition and observed key differences in their commitment to what he described as sustaining and disruptive technologies. Sustaining technologies, Christensen said, were those innovations that helped companies to improve existing product performance. The industry leaders Christensen studied tended to be strong in their ability to foster and implement sustaining technologies. They did so by listening and responding to the needs of their existing customers.

The same leading companies tended to be less strong, however, in their ability to recognize, implement, or respond to disruptive technologies (Christensen, 1997). Christensen (1997) defined disruptive technologies as innovations that “bring to market a very different value proposition than had been previously available” (p. xv) and that actually “underperform established products in mainstream markets” (p. xv). Disruptive technologies yield products and services characterized by “features that a few fringe (and generally new) customers value” (p. xv) and are “typically cheaper, simpler, smaller, and frequently, more convenient to use” (p. xv).

Christensen’s work (1997) led him to propose and subsequently refine (Christensen & Raynor, 2003) a theory of disruptive innovation. Christensen described disruption innovation as “a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors” (Christensen, 2014, para. 1). The theory is widely regarded and has been studied and reported on extensively (Bennett, 2014; Christensen & Eyring, 2011; Christensen & Raynor, 2003; Lepore, 2014; Schmidt & Druehl, 2008; Weise & Christensen, 2014). The theory holds that disruptive innovations transform industries by offering:

simplicity, convenience, accessibility, and affordability where complication and high cost are the status quo. Initially, a disruptive innovation is formed in a niche market that may appear unattractive or inconsequential to industry incumbents, but eventually the new product or idea completely redefines the industry. (Clayton Christensen Institute, 2014, para. 2)

Christensen (1997) observed that an organization’s strengths and qualities may leave it vulnerable to new market entrants. This is because as established processes and values are often inflexible, relative to alternatives. Disruptive innovations tend, Christensen said, tend to be

straightforward and often simpler than prior approaches. They offer attributes valued only in emerging (not established) markets. And as such, they tend to be perceived as not important by those in the mainstream. As disruptive innovators serve new markets, their products evolve from functionality to reliability, and then to convenience and price. Disruptive organizations must be flexible and able to react to ambiguous circumstances (Christensen & Raynor, 2003).

Successful organizations align resources according to the needs and expectations of key stakeholders. Customers and investors dictate how money will be spent in an organization as decision-makers prioritize their satisfaction. Accordingly, organizations prioritize their capabilities, structure, and culture in a manner that aligns with requirements of their existing value network (Christensen, 1997; Christensen & Raynor, 2003). Christensen (1997) observed that “value networks strongly define and delimit what companies within them can and cannot do” (p. 53). Organizations tend to align resources with the sustaining technologies that meet the needs and projects of their existing value network. The larger and more successful an organization becomes, Christensen argued, the less likely it is to value emerging markets as part of its growth strategy. Disruptive innovations take hold in these emerging, poorly understood markets (Christensen, 1997; Christensen & Raynor, 2003; Schmidt & Druehl, 2008). But disruptive innovations are also complex and uncertain. Strong, first-mover advantages exist, and are available to those organizations that can manage the complexity and ambiguity of disruptive innovations to meet the needs of these new markets (Christensen, 1997; Christensen & Raynor, 2003).

Purpose of Research

The purpose of this exploratory, qualitative study is to understand and describe the current competency-based education practices of American higher education institutions within

the context of Christensen's (1997) theory of disruptive innovation. Competency-based education practices are defined as those that seek to measure and recognize the attainment and mastery of competency independent of time, place, or source or learning (Johnstone & Soares, 2014; Klein-Collins 2012; Mendenhall, 2003, 2012).

Research question. This study sought to answer one central research question and four related sub-questions. The study's central research question was: To what degree has competency-based education served as a disruptive innovation within American postsecondary education? Four associated sub-questions also guided the research. They were:

- How have American postsecondary education institutions deployed competency-based education practices?
- What characteristics of competency-based education practices deployed by American higher education institutions are common or distinct?
- What criteria have been used to evaluate competency-based education practices deployed by American higher education institutions?
- What outcomes have been achieved by American higher education institutions that have deployed competency-based education practices?

Assumptions. Three assumptions framed this study. First, it was assumed that competency-based education practices are appropriate for use in postsecondary education environments. That is, the practices are assumed to be both reasonable and sound, relative to the demographics, circumstances, and goals of college and university students. The study did not test the validity of competency-based education practices though literature about its validity and relevance is presented. Second, it was assumed that Christensen's (1997) theory of disruptive innovation will provide an appropriate conceptual foundation from which to assess

postsecondary competency-based education practices. The study did not seek to determine the validity of Christensen's theory or its appropriateness for use in postsecondary education settings. The literature review provides discussion of this theory within the frame of innovation and previous applications.

This study relied upon publically available artifacts to explore, understand, and describe the competency-based education practices of American higher education institutions. Accordingly, a third assumption inherent of the study is that such artifacts would be sufficient in both their scope and availability to appropriately inform the research.

Conceptual & Theoretical Foundation

This study examined the concepts and practices of competency-based education as deployed by American postsecondary education institutions. It did so within the context of Christensen's (1997) theory of disruptive innovation. Competency-based education models measure student learning through the use of assessments that are aligned with desired learning outcomes (Klein-Collins, 2012). Relevant competencies and learning objectives must be mastered in order for students to receive recognition and make progress toward completion (Johnstone & Soares, 2014; Soares, 2012). Such models measure learning independent of a student's time on task or source of knowledge (Mendenhall, 2003, 2012), theoretically allowing learning to be more personalized and accelerated than traditional, time- and credit hour-based models (Lumina Foundation, 2014c).

Christensen's (1997) theory of disruptive innovation posits that certain, disruptive innovations have the potential to transform entire industries "by introducing simplicity, convenience, accessibility, and affordability where complication and high cost are the status quo" (Clayton Christensen Institute, 2014, para 2). Christensen's theory of disruptive innovation

provided the theoretical framework from which the study's researcher described and discussed American postsecondary competency-based education practices.

Competency-based education definitions. An understanding of the following theoretical or operational concepts has informed the development of this research proposal and will assist readers of this study to interpret its results.

Competency-based education. Competency-based education involves practices that employ an outcomes-based approach to learning with emphasis is on what graduates know and can do. Competency-based methods assess learning by objectively measuring students' understanding of prescribed competencies and their ability to apply required knowledge, skills, and abilities (Klein-Collins, 2012).

Competencies. Competencies are observable behaviors (Biech, 2008) and synthesis of knowledge, skills, and abilities necessary to perform a specific task (Voorhees 2001). The certification of competencies requires a mastery threshold in that they competencies are applied, level-specific, and measurable (Klein-Collins, 2012).

Learning objectives. Ewell (2001) described learning objectives as the discrete knowledge, skills, and abilities a student should attain as a result of a learning experience. The *American Society for Training & Development Handbook* defines learning objectives as statements that establish a "measureable behavioral outcome, used as an advanced organizer to indicate how the learner's acquisition of skills and knowledge is measured" (Biech, 2008, p. 875).

Learning objects. Learning objects are self-contained instructional materials (Biech, 2008). In the context of this research proposal, the term learning objects will represent the source of content used as foundational to a student's study. A learning object deployed within a

competency-based education program may be a text book, instructionally designed courseware, faculty-produced study materials, openly resources available via the Internet (e.g., videos), courses, or any other resource deployed for the purpose of helping students to understand relevant subject matter.

Assessment. An assessment is the process or instrument used to “systematically appraise a learner’s skill or knowledge level” (Biech, 2008, p. 863). In the context of this research proposal, assessments may be described as both pre-assessments or post-learning assessments. Pre-assessments are often used by competency-based practitioners to diagnose skills and knowledge gaps. Post-learning assessment instruments are often used to provide for the certification of mastery.

Delivery type. In the context of this research proposal, the term delivery type will be used to distinguish between online learning, face-to-face learning, and blended learning environments. Online learning is that in which instruction, collaboration, and communication occurs and is delivered exclusively at a distance, through the Internet. Face-to-face learning is that which occurs when students, faculty, and others are co-located, in the same room or facility while engaged with a given course or program requirement. Blended learning environments are those that combine face-to-face and online learning environments.

Disruptive innovation definitions. An understanding of the following theoretical or operational concepts has informed the development of this research proposal and will assist readers of this study to interpret its results.

Innovation. An innovation is “the initial market introduction of a new product or process whose design departs radically from the past practice” (Proven Models – Abernathy & Clark,

2014, para. 3). Innovations may manifest as “an idea, practice, or object perceived as new by an individual or other unit of adoption” (Rogers, 2003, p. 12).

Value networks. Christensen and Raynor (2003) defined a value network as “the context within which a firm establishes a cost structure and operating processes and works with suppliers and channel partners in order to respond profitably to the common needs of a class of customers” (p. 44). Value networks influence an organization’s strategy relative to innovation and “shape the rewards and threats that firms expect to experience through disruptive versus sustaining innovations” (p. 44).

Sustaining innovations. Christensen (1997) defined sustaining innovations as those changes, technological enhancements, or modifications that take products and services to new, improved levels of performance. Sustaining innovations are designed to meet the needs of an organization’s existing, high-end customers.

Disruptive innovations. Christensen (1997) defined disruptive innovations as those approaches that seek to change a competitive landscape by introducing affordable, simple, flexible, and/or more convenient products and services. Disruptive innovations tend to emerge through products and services that may initially be unimportant to mainstream customers. In fact, Christensen suggested, disruptive innovations may initially result in worse performance as compared to the products and services available in mainstream markets.

Scaleability. The term scaleability refers to an organization’s ability to manage or expand in order to accommodate growth. In the context of this research proposal, the term will be used to assess the potential of a given competency-based education program to scale in response to student or stakeholder demand.

Replicability. The term replicability refers to an organization's ability to duplicate an activity, process, or result in a setting or time other than its original. In the context of this research proposal, the term will be used to assess the potential of a given competency-based education program to be replicated within an institution or by other institutions in response to student or stakeholder demand.

Commercialization. Commercialization occurs when new products, processes, or services are introduced within a market and are accepted by consumers.

Significance of the Study

No single innovation, on its own, will be powerful and transformational enough to help bridge the nation's 24 million degree attainment gap and put its higher education institutions on more stable, sustainable footing. The higher education landscape and its constituents are too diverse and complex for there to be a single, best way of meeting the nation's education needs. Current postsecondary education practices work well for many students and yet fail many others in terms of the overall cost of college (The College Board, 2014a, 2014b), time-to-degree, (Symonds et al., 2011), and completion rates (Shapiro et al., 2014; U.S. Census Bureau, 2013). A variety of innovative, new ideas and methods are needed. The nation's postsecondary institutions urgently need to experiment with new learning paradigms in order to discover the type of operational efficiencies, learner flexibility and effectiveness, and economic advantages students deserve and expect (Greenstein, 2013; Merisotis, 2013; Obama, 2009).

Policy makers at all levels of American government have demanded evidence of innovative thinking and frequent experimentation with new learning paradigms from the nation's colleges and universities (Bogaty, 2013; Obama, 2009). Specifically, because it has the potential to improve the quality and affordability of an institution's operational and learning realities

(Lumina Foundation, 2014c), policy makers have encourage the nation's colleges and universities to experiment with competency-based education methods through the use of policy incentives, demonstration projects, or funding opportunities (e.g., U.S. Department of Education, 2014c).

Despite its potential to transform, or at least influence, the strategies colleges and universities use to meet the needs of today's learners, few modern empirical studies of competency-based education exist. Among the most robust empirical studies of postsecondary competency-based education practices are those published by Mendenhall (2003) and Klein-Collins (2012). Kasworm's (1980) analysis of competency-based education practices, while substantial from both a quality and depth of analysis perspective, is now more than 30 years old. Many of the recent observations and discussions of competency-based education have been published within industry trade literature and popular press forums. And while coverage of the practice within these environments has been extensive, such reports have frequently been offered from an ideological or theoretical perspective, in the context of an education reform agenda, or aligned with a particular university's brand or practice. Similarly, while the empirical academic literature on disruptive innovation is extensive, few studies have examined disruptive innovation in the context of higher education. And to the researcher's knowledge, just one empirical study (Weise & Christensen, 2014) has examined competency-based education practices within the specific context of disruptive innovation theory.

The significance of the proposed study stems from its ability to address gaps of currency, context, disruptive innovation potential, and depth of understanding that are exist within the academic literature on competency-based education. Higher education scholars, administrators, policy leaders, practitioners, and students alike may benefit from a research-based, objective,

empirical review and discussion of the competency-based education practices currently employed by American higher education institutions. The study may also contribute to the already rich literature on disruptive innovation theory by offering a similar discussion of competency-based education as a potentially disruptive innovation in higher education.

Chapter Summary

President Obama, administration officials, policy and foundation leaders, and a variety of higher education stakeholders have called upon the nation's postsecondary institutions to develop and deploy innovative practices that will meet the needs of students and help America to once again have the highest proportion of college graduates in the world. Competency-based education may be one such practice. It offers a variety of qualities and solutions that may be appropriate within the context of today's student realities. Competency-based education offers the potential for students to learn independent of time and place, effectively, efficiently, and in a manner that is personalized and consistent with their own, unique circumstances and sources of learning. Competency-based education models hold learners accountable to acquire and demonstrate relevant competencies in order to earn their degrees or credentials. When deployed with an emphasis on achieving operational efficiencies, competency-based education models have the potential to lower the overall cost of college, providing savings for both institutions and students alike and putting the institutions that offer them on a more sustainable footing.

The nation's policy-makers, higher education leaders, and postsecondary students are at a crossroads. They can persist along the same path and practices that have led to the current realities and challenges described previously. Or they can pursue innovative practices and creative change that have the potential to put America's citizens and its postsecondary institutions on a more effective, fulfilling, sustainable path to prosperity. The postsecondary

institutions of tomorrow will be expected to operate in student-centric, efficient, effective ways.

The practice and potential of competency-based education deserves rich, careful study as a potentially disruptive innovation that may help postsecondary institutions improve quality, circumstances, and results.

Chapter 2. Conceptual Foundation

This chapter will present select concepts, findings, and theories, from the literature on this study's conceptual and theoretical foundations: competency-based education and disruptive innovation. Competency-based education is discussed first. The practice is reviewed in the context of its American origins and as deployed within modern settings. Next, a review of select innovation theories is presented. That review is followed by an in-depth description of Christensen's theory of disruptive innovation.

Competency-Based Education

The academic literature on American competency-based education can be characterized as a collection of historical summaries, process and practice descriptions, and theoretical arguments. Few, modern empirical studies of competency-based education exist. Recent observations and discussions of competency-based education have primarily been published within industry trade literature and popular press forums. And while coverage of the practice within these environments has been extensive, such reports have frequently been offered in the context of an education reform agenda or aligned with a particular university brand or practice.

American competency-based education first emerged at scale through teacher education training programs that were developed by colleges and universities during the 1960s with grant support from the U.S. Department of Education (Joyce, 1971; Klein-Collins, 2012). During the 1970s and 1980s, the department offered additional grant support to institutions that agreed to develop competency-based education programs to meet the demands of a burgeoning adult student population (Klein-Collins, 2012). During the 1990s, the practice became common among vocational education and training programs but was relatively scarce elsewhere. More recently, as influential policy leaders, educators, foundations, and the department itself have expressed

enthusiasm for competency-based education (e.g., Bergeron, 2013; Duncan, 2014; LeBlanc, 2014; Mendenhall, 2013), the practice has become more common in postsecondary environments (Competency-Based Education Network, 2014; Johstone & Soares, 2014; Klein-Collins, 2012).

Early competency-based education efforts. The earliest American competency-based education initiatives are said to have emerged through the development of the training programs used to quickly prepare soldiers, airmen, and others who were needed in support of the nation's efforts in World War II (Joyce, 1971). The ability to deliver "precise and rapid training which considered the learner chiefly in terms of his capacity to respond to the training" was of paramount concern at the time (p. 21). According to Gagne (as cited in Joyce, 1971), training programs deployed for these purposes were developed in four phases:

- Program goals were identified with particular emphasis on behavioral elements and competencies to be achieved.
- Behavioral elements and competencies were organized into coherent units.
- Training exercises that aligned with desired behaviors and competencies were developed.
- An evaluation system to assess acquisition of the desired behaviors and competencies was developed. Feedback from the system was provided to trainees and their instructors.

Following the war, influenced by these efforts, policy makers, educators, foundations, and others began to experiment with "performance-based or competency-based education" (Joyce, 1971, p. 11) strategies. By the early 1970s, competency-based education proponents and early implementers had experimented with methods that allowed them to manage education efforts by "establishing clear education goals, relate them to precise and direct means, and monitor the process so as to determine its effects and revise the program intelligently" (p. 1).

Such efforts espoused “direct and definite ends and means rather than general, indirect or indefinite ends and means” (p. 11).

While the military and industry had deployed some competency-based training programs during the 1940s and 1950s, the majority of early American competency-based education efforts involved teacher education training programs that were developed during the 1960s (Joyce, 1971). The goal of these programs was to improve the quality and effectiveness of elementary and secondary classroom education by helping teachers to apply consistent, proven teaching methods. These programs were developed, according to Joyce (1971), using a six step process:

- A working model that mapped the desired competencies, performance, and contextual realities of a model teacher was established.
- The working model was disaggregated into groups of competencies that would be used to inform specific components of the training program.
- Specific training strategies were selected and developed.
- An overall training program was developed with emphasis on integrated relationships, components, systems, and communication.
- A management system was established that could be used to monitor trainees’ progress, the effectiveness of specific program components, testing results, and opportunities for program revision.
- The program was reconciled with expectations and the real-world performance of trainees and their employers in a continuous manner for the purpose of informing program improvement efforts.

During the 1970s, competency-based programs emerged that focused on the basic educational needs of adults (e.g., literacy programs, alternative high school diploma programs,

etc.). By 1978, 43 states had sponsored 153 unique competency-based education programs. Most of the programs were new and emerging at the time. None could have been considered to be fully developed success stories at the time (Kasworm, 1980). But their existence was evidence that the practice of competency-based education during the 1970s was appealing to a wider range of audiences than troops and teachers.

Kasworm (1980) described the state of the art in competency-based education in the early 1980s as diversified and designed to aid disadvantaged adults through various pilot programs. Such programs were adult-oriented and typically focused on literacy. In fact, Kasworm specifically used the term competency-based *adult* education (emphasis added) to describe the programs of the time. Still, she described awareness of the approach among adult education practitioners as minimal.

Kasworm (1980) cited a 1978 U.S. Office of Education report that defined competency-based education as “a performance-based process leading to demonstrated mastery of basic and life skills necessary for the individual to function proficiently in society” (p. 4). These programs had the potential, Kasworm suggested, to advance mastery learning strategies by providing flexible formats designed for adults. The approach’s flexible, responsive learning environments and systemic instruction were intended to achieve very specific learning outcomes. Competency-based education programs were characterized by a “defined set of competencies, assessment measures, and resource counseling” (p. 3).

Early 1980s competency-based education programs used development methods and service practices similar to those used by the competency-based practitioners of the 1960s and 1970s. According to Kasworm (1980), the programs identified specific learning outcomes and used both pre- and post-assessment instruments to determine if competencies had been achieved

and mastered. Course content, instructional strategies, and processes all varied by program and were deployed consistent with the needs of students. Most programs, Kasworm said, employed an adult-learner orientation and aspired to achieve the certification of mastery, not just minimal competence.

All of the programs studied by Kasworm (1980) were designed with the realities of adult learners in mind and centered on prescribed objectives and outcomes (i.e., the competencies). Most offered flexibility of time and participation so that “students may begin their learning at any time, progress in their learning of competencies at their own pace, and have opportunities to return to inadequately learned concepts of skills until mastery” (p. 19). Many programs offered personalized instruction. Pre-assessments were often used to diagnose skills and knowledge gaps. Post-learning assessment instruments provided for the certification of mastery. Most programs allowed for variable instruction, allowing students to select learning resources and experiences that would best meet their specific needs. Some competency-based education programs provided advisement or counseling. Some featured established competencies with an aligned, standard curriculum. Others directed students to curricular resources but left it to the learner to choose an appropriate path on his or her own.

Kasworm (1980) concluded her study by describing the “ideal state” (p. 19) of competency-based education to include an emphasis on specific outcomes, assessment, certification of mastery, variable instruction, and an adult learner orientation. She argued that the practice of competency-based education would continue to grow and suggested that questions for future study would include:

- What is competency?
- How should competency be measured?

- What will the impact of competency-based education be?

Not all who studied the practice of competency-based education have been complementary. Collins and Fingeret (1983) offered a philosophical critique of the competency-based education systems deployed in the early 1980s. They described skepticism about the approach as rooted in its tendency to reduce complex phenomena to discrete concepts and suggested that such efforts were “doomed to failure” (p. 175) because “it is simply impossible to define all the properties of competent performance” (p. 175). Competency-based education systems relied upon assessments, Collins and Fingeret wrote, that were developed in isolation of relevant, contextual learning circumstances. The systems’ competency statements themselves served to define teaching and learning in a controlled, restrictive manner, were “divorced from an individual’s real life context” (p. 178) and as such, “artificial” (p. 178).

Central to Collins and Fingeret’s (1983) critique was the tendency of competency-based education systems to use a prescribed curriculum that could be delivered in a manner that diminished face-to-face interaction among participants. Designers of this curriculum were reported to have been detached from the learners themselves, “unable to understand the learning situation from the learners’ perspective . . . [or] take account of the learners’ individual definitions of reality and unique constellations of motivation” (p. 181). This resulted in systems within which learners were isolated from their educators, and from one another. It had the effect, Collins and Fingeret argued of separating knowledge from application.

Early 21st century initiatives. Writing in 2001, Voorhees described competency-based education as “the early stages of a learning revolution” (p. 5) and suggested that the approach offered a bridge between higher education’s traditional paradigm and the demands of contemporary students and employers. The former, Voorhees said, defined quality in terms of

broad student outcomes (e.g., time on task, retention, graduation rates). The latter, Voorhees suggested, perceived quality to be found in practices that afforded the shortest path to completion available. Voorhees suggested that the measurement of competencies would shape the learning revolution he described and called upon institutions to experiment with various learning products, multiple delivery methods, demonstration and credentialing of progress in granular ways, and assessment-driven approaches.

Voorhees (2001) cited a U.S. Department of Education work group's 2001 definition of a competency as "a combination of skills, abilities, and knowledge needed to perform a specific task" (p. 8) and suggested that "performance-based learning" (p. 8) systems would be those that could document a learner's attainment of competencies. Competencies have great utility for postsecondary institutions, Voorhees argued, because they could be bundled and unbundled according to needs of a program to provide "the optimal combination of skills and knowledge needed to perform a specific task" (p. 9).

Voorhees described the validity of competency-based education practices as tied to their use of measurable assessment. Such assessments, he said, should be developed with input from subject matter experts external to an institution's learning process and should be focused on granular levels of measurement. The use of assessment would allow student learning to be described in ways that could be easily understood by various stakeholders. Too, students who failed to master certain competencies could easily be directed back to specific learning activities. Well mapped competencies "would logically and clearly build on other competencies" (Voorhees, 2001, p. 11) providing flexibility and predictability.

Johnstone, Ewell, and Paulson (2002) called for the evolution of credentialing practices and suggested that an "achievement-based system" (p. 14) would be more consistent with 21st

century higher education realities than the industry's dominant, credit-based approach. Johnstone et al. advocated the frequent use of assessment to measure competencies rather than the time, place, or manner of learning to identify knowledge gaps, inform student-specific learning strategies, and ultimately verify that students had developed and demonstrated required competencies. Personalized learning plans, they said, could be informed and facilitated by qualified academic mentors or coaches and may allow for the use of learning resources offered through a variety of delivery models and institutions. Such a system, they argued, would be workforce relevant, allow for third-party verification of competencies, recognize competencies learners might already possess, and allow for a more portable, credible learning experience.

Several policy and regulatory events occurred in the early part of the 21st century that paved the way for American colleges and universities to more aggressively experiment with competency-based education. First, Congress authorized the Department of Education to conduct a demonstration program for the purpose of determining how federal financial aid might be used by distance education providers. At the time, federal financial aid was approved for use only by campus-based institutions. Among the program's original 15 participants was Western Governors University (WGU), a new university that intended to offer only competency-based education degree programs. In 2002, WGU became the first competency-based university to earn regional accreditation. Next, in 2003, the department funded the development of a national, competency-based Teachers College offered through WGU with a \$10 million grant. It is widely held (Center for American Progress, 2012a; Klein-Collins, 2012) that these competency-based education 'firsts' established precedent in key areas of university governance and operations that paved the way for other universities to follow suit.

In 2011, U.S. Secretary of Education, Arne Duncan, referenced the various precedents established by, and the success of, WGU when he said that the department expected competency-based education models to become ubiquitous in American higher education (Duncan, 2011). In 2012, the department approved a particular type of competency-based education called direct assessment as eligible to receive federal financial aid (Bergeron, 2013). The department cited existing financial aid law (Direct Assessment Regulations, 2014) and defined direct assessment programs as those that use instruments such as projects, papers, exams, or portfolios to measure student learning in lieu of credit or clock hours (Bergeron, 2013). Soon thereafter, Southern New Hampshire University's (SNHU) competency-based *College for America* earned its regional accreditation and became the first university to receive approval to offer federal financial aid under the department's new direct assessment provisions (Field, 2013).

Klein-Collins (2012) studied current postsecondary competency-based education programs and defined a competency-based education model as one "in which an institution clearly defines the specific competencies expected of its graduates" (p. 4). Such programs established what a "degree-holder should know and be able to do" (p. 8). Klein-Collins distinguished learning outcomes from competencies in terms of application and measurability. Citing Ewell, she described the former as the knowledge, skills, and abilities a student would attain as a result of a specific learning experience. Competencies, Klein-Collins argued, were broader in that they require the demonstration of mastery, are applied, level-specific, and measurable.

The competency-based education practices Klein-Collins (2012) examined varied dramatically by institution. Some institutions emphasized competencies within traditional, instructor-led, credit-hour based systems. Klein-Collins described these institutions as offering

“competency-focused programs” (p. 31) in that leaders had applied a competencies framework to their existing, credit hour-based programs. Other institutions, she said, used “purely competency-based programs” (p. 31) in lieu of traditional systems, creating efficiencies, learning flexibility, and economic advantages in the process. Among the latter group, institutions Klein-Collins examined all relied on the use assessments to verify students’ competencies and awarded credits and credentials strictly according to students’ performance with such instruments.

Klein-Collins (2012) concluded that the competency-based education models she studied tended to be more efficient, effective, and fair than traditional credit-hour learning models.

Klein-Collins suggested that policy and higher education leaders do more to support the further adoption of competency-based education programs. Specifically, Klein-Collins advocated that such leaders:

- Work to establish competency-based education guidelines that would help institutions to ensure both quality and rigor.
- Collaborate with national and regional employers to ensure that program and course competencies are both relevant and aligned with the needs of business.
- Reconsider existing policies and regulations in order to remove barriers that may stifle competency-based education innovation.
- Adopt prior learning assessment strategies that recognize what students have learned, independent of time, place, or manner of learning.
- Create and adopt transfer and articulation agreements based on common competencies frameworks.
- Rely upon assessments to ensure quality and demonstrate program value.
- Experiment with traditional staffing and course design models.

In a follow-up study, Klein-Collins and Baylor (2013) studied the experiences of 13 students and graduates of competency-based education programs. The researchers found common attributes among the programs participants had engaged. While the formats and specific components of the competency-based education programs examined were varied, they occurred in all common delivery settings: online, face-to-face, blended, professor-led, or independent study methods. Assessment strategies deployed within these programs were also varied and included projects with an emphasis on real-world application, portfolio development requirements, written reflection on learning, objectively scored exams, or a combination thereof.

Klein-Collins and Baylor (2013) also identified seven common themes among the experiences of study participants. Participants described programs that were academically rigorous and that required evidence of learned competencies. Participants found their programs to be helpful in terms of career advancement and suggested that the competencies they had developed easily transferred to their real-world, work environments. The programs examined appeared to be adult-friendly, offering flexible formats and providing an opportunity to receive recognition for learning that had occurred in prior educational or employment settings. Participants suggested that their experiences were connected as well, identifying peer interactions and support from coaches, mentors, or others as both important and effective.

While beyond the scope of the present study, it is important to note here that today's competency-based education programs are not confined to postsecondary education. Priest, Rudenstine, Weisstein, and Gerwin (2012) examined competency-based programs deployed within 11 New England high schools and found students to be both thriving in, and satisfied by, their experience. The programs these researchers observed used clearly defined standards of mastery and relied upon methods for tracking mastery attainment at the student-level. The

programs were flexible in terms of pacing, even though all existed within a state or district paradigm that imposed certain, time-based requirements. All of the programs had found ways to allow students the opportunity to move ahead as soon as mastery had been attained, rather than at some time-based threshold. This approach was observed to be particularly important to students from the motivation and engagement perspectives.

Emerging interest in competency-based education. At the time of this writing, interest in competency-based education among higher education policy leaders and practitioners appears to be significant. The U.S. Department of Education (2014c) has announced that it will create a competency-based education experimental sites program to allow colleges and universities the opportunity to experiment with competency-based methods independent of federal financial aid regulations. Large, multinational education technology and curriculum providers have publically declared their intention to build and offer competency-based products and services to keep pace with market demand (LoudCloud Systems, 2014; Pearson, 2014). The Lumina Foundation has convened and is financially supporting what it calls its Competency-Based Education Network (Competency-Based Education Network, 2014), a consortium of 18 postsecondary institutions who are experimenting with competency-based education to “provide an evidence-based approach to advancing high-quality competency-based education capable of serving many more students of all backgrounds” (para. 1). And others have called for competency-based solutions to challenges as diverse as accreditation reform (Burke & Butler, 2012; Terkla, 2001) or the creation of a national workforce skills credentialing system (CLASP Center for Postsecondary and Economic Success, 2014; Ganzglass et al., 2011).

Soares (2012) examined modern competency-based education practices and offered recommendations for federal policy makers, scholars, and practitioners. The attainment and

demonstration of mastery is paramount in competency-based education, Soares said. As such, assessments must be integral to the student experience to allow for the personalization of learning. Soares further suggested that competency-based education has the potential to transform the higher education industry if practitioners could simply agree upon the standards – the required knowledge, skills, abilities, competencies, and demonstration practices – that must necessarily inform learning and assessment design. Finally, Soares argued that more must be learned about how technology, curriculum, and process work best in competency-based education in order for the practice to fulfill its potential.

Gazglass et al. (2011) advocated on behalf of a perspective of competency-based education that would transcend postsecondary education environments. The researchers argued that a national-level competency-based credentialing system that is source-, setting-, and time- of learning agnostic is needed. The authors based their argument on the premise that many adults engage non-credit occupational education and training programs but cannot convert this learning to postsecondary credit. They suggested that approximately 50% of all postsecondary education involves non-credit courses and programs. Because the nation lacks a standard way of evaluating these experiences, however, all of this non-credit learning in America tends to lead to “no credential at all” (p. 5).

Employers use credentials as proxies for competence, and yet credit-based degrees recognize inputs (e.g., time on task) in favor of outputs (e.g., evidence of specific learning outcomes). Gazglass et al. (2011) proposed a national, qualifications framework for credentials that would define specific learning outcomes and competencies. The authors suggested that a national, competency-based credentialing system could bring uniformity to the credentials landscape and yield curriculum that is more consistent with the needs of employers. Such a

system would allow for the use of consistent metrics and quality assurance standards that could ensure both the portability and workforce-relevance of credentials. Standardized learning outcomes would honor the learning that occurs in both credit and non-credit courses while providing metrics to evaluate learning consistent with the needs of labor markets.

Ganzglass et al. (2011) recognized that bringing about such change would be challenging. Competencies, they argued, must be standard, transparent to students and employers, portable, and occupational in nature. Skills panels, they suggested, could serve as intermediaries between employers and key stakeholders. Because postsecondary education is highly diverse and fragmented, collaboration with employers, colleges, and other institutions would be essential.

Others have examined the potential of competency-based education in grand ways. The Lumina Foundation convened a group of 20 leaders, representing 15 national education and workforce organizations, to consider strategies that might yield what it described as a national, competency-based credentialing “ecosystem” (CLASP Center for Postsecondary and Economic Success, 2014, p. 5). Such a system, group members argued, would increase the transparency, trust, and portability of credentials while providing benefits to employers, job-seekers, and students. Today’s credentialing system, they argued, is fragmented and in “crisis” (p. 1). The nation’s education and training system yields a multi-layered credentialing marketplace that includes degrees, certificates, certifications, licenses, and badges. The market value of these credentials is not always clear as we lack common quality assurance criteria or standards (CLASP Center for Postsecondary and Economic Success, 2014).

The Lumina group envisioned a modern credentialing ecosystem grounded in competencies, regardless of the type of credential. The ecosystem would combine “rigor and agility to produce credentials valued by employers, government, educators, students, and job

seekers” (CLASP Center for Postsecondary and Economic Success, 2014, p. 5). The ecosystem would share common language, tools, and approaches. It would require consistent definitions and language, shared QA mechanisms, and shared public-private data infrastructure. An emphasis on competencies as the basis for credentials, they argued, “would create a transparent student-centered approach” (p. 5).

The methods and language of competency-based education. The methods, characteristics, and arguments in support of today’s competency-based education programs are strikingly similar to those used by early competency-based education practitioners. While the Internet has modified the method of delivery and increased the potential reach of competency-based programs to a significant scale, the themes and practices described in the literature over time are highly consistent. Both early and modern-day practitioners have used a variety of methods to ensure the quality and consistency of their competency-based education programs. Both have used methods that establish agreed upon competencies, design a learning experience, assess students’ ability to demonstrate competency, and then revise programs consistent with observed experiences and student outcomes.

Even the specific language used by scholars and early proponents of competency-based education is consistent with that of modern practitioners and proponents. Joyce, writing in 1971, suggested that competency-based education could offer a response to what he perceived as a growing concern for more accountability in education:

If the competencies of the teacher can be defined in measurement terms, then we can hold trainers of teachers accountable to certify them in terms of measureable performance. On the other hand, if we speak of certification in terms of the accumulation of credits in education courses and hours of practice teaching experience, we have no way of telling

what was learned through those experiences and no way of holding people accountable if the teacher is unable to perform satisfactorily. (p. 27)

During a June 2012 Center for American Progress panel discussion on competency-based education, a diverse collection of panelists representing regulatory and accreditation agencies as well as current practitioners discussed opportunities related to postsecondary competency-based education. Panelist Edward Ochoa, then assistant undersecretary for postsecondary education at the U.S., Department of Education and co-chair of a department task force that supported 20 institutions working with competency-based education programs, described the department as a strong supporter of competency-based education. Ochoa argued that the model “allows us to hold learning and quality constant” (Center for American Progress, 2012b, 4:05). Ochoa further suggested:

The department is interested in seeing competency-based programs developed and flourish . . . there is also a shared responsibility for other partners to work with the department. And that means that institutions that are interested in innovating, need to step up. Accreditors also need to be open to [innovation] . . . So, there is room for innovation and we really do welcome the opportunity. (Center for American Progress, 2012b, 11:10)

Theories and Models of Innovation

The 19th century has been described as “the heroic period of both invention and entrepreneurship” (Freeman & Soete, 1997, p. 198). The age was heroic in that transformational innovations, discovered by individuals through their work in private laboratories, helped to drive the industrial revolution in both Great Britain and America. As industries matured during the 20th century, organizational innovation began to emerge not through the work of private, individual inventors but from professional research and development (R & D) units within

academia, government, and industry. By World War I, corporate R & D units had become “the center of American inventive activities” (Freeman & Soete, 1997, p. 198). By the early 1990s, successful organizations had learned to grow through research-based innovation and frequently employed more knowledge and R & D workers than product handling employees.

The academic literature on theories, characteristics, and methods of innovation is massive. A search for the term innovation yields results lists akin to those one might encounter when searching the literature for studies on education, politics, or healthcare. Tens of thousands of studies of innovation, published in academic journals dedicated to such diverse areas of study as leadership and management, industrial relations, creativity, strategic planning, economics, communication, and others have been published. In fact, more than 6,500 studies on the subject of innovation had been published in the peer reviewed academic journals available through the Ebscohost database during the first six months of 2014 alone.

Studies of innovation have adopted a variety of perspectives. Some have been philosophical or scientific in their focus. Studies that have been concerned with economic, social, or cultural innovation are said to be consistent with the work of Shumpeter, an early 20th century economist and professor. These Schumpeterian innovation studies have tended to adopt one of three paradigms: a capabilities paradigm, a corporate entrepreneurial paradigm, and a cultural paradigm. The capabilities paradigm employs an economic perspective on innovation. The paradigm’s premise is that an organization’s capabilities influence its innovation decisions and tactics. The corporate entrepreneurial paradigm adopts a social perspective on innovation. Corporate entrepreneurial researchers expect an organization’s innovation decisions and tactics to emerge from its grassroots through specific organizational actors and their relationships. Those innovation scholars who employ the cultural paradigm frame innovation studies in strictly

cultural terms and would expect that an organization's vision and intergenerational relationships influence its ability to develop the technological abilities and inclination to innovate (Tzeng, 2009).

Definitions of innovation are as diverse as the studies that have produced them. Schumpeter distinguished invention from innovation. An invention, he suggested, centered on ideas whereas an innovation was accomplished only when those ideas had been commercialized via a transaction (Godin, 2012). Freeman (1974) defined innovation as the diffusion of new, improved products and services within an economy and suggested that innovation is both "an essential condition of economic progress and a critical element in the competitive struggle of enterprises and of nation states" (Freeman & Soete, 1997, p. 2). Abernathy and Clark distinguished an innovation from the status quo it was designed to replace and defined innovation as "the initial market introduction of a new product or process whose design departs radically from the past practice" (Proven Models – Abernathy & Clark, 2014, para. 1). Rogers (2003) defined innovation as "an idea, practice, or object perceived as new by an individual or other unit of adoption" (p. 12).

Contemporary studies of innovation have produced theories, models, and analysis of innovation that explore technological innovation as applied by organizations and subsequently embraced by consumers and marketplaces. In fact, one might argue that a plethora of interesting, creative innovation theories and frameworks exist. This study will employ Christensen's (1997) theory of disruptive innovation as a conceptual framework. The theory is described at length subsequently. In order to position Christensen's theory of disruptive innovation within both the history and context of innovation studies, that description is preceded by a brief review of key innovation theories and models, all of which contain elements consistent with, and foundational

to, Christensen's theory. Specifically, Schumpeter's (1950) theory of creative destruction; Freeman's (1982) economics of innovation theory; Abernathy's, Utterback's, and Clark's models of innovation (Abernathy & Clark, 1985; Abernathy & Utterback, 1978; Utterback & Abernathy, 1975); and Rogers' (2003) diffusion of innovation theory are described and discussed.

Schumpeter's theory of creative destruction. Schumpeter (1950) described capitalism as an evolutionary process, one that caused industries to emerge, flourish, and ultimately fade. He acknowledged social and natural realities as having influence on economic actions but described these factors as secondary agents of change. Innovation, Schumpeter argued, is the "prime mover" (p. 82) of capitalism's evolution. Innovation, he said, creates new technologies, new methods, and new forms of organization, allowing entrepreneurs to serve the needs of new markets. Innovation emerges from within existing economic structures "incessantly destroying the old one, incessantly creating a new one" (p. 83).

Schumpeter (1950) described this innovation-driven evolution of capitalism as the "process of Creative Destruction" (p. 83) and suggested that, ultimately, capitalism would evolve in such a way that just a few, large organizations would control and influence economic realities. Innovation, he argued, would initially drive this evolution and eventual consolidation by creating cost and quality advantages that "strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives" (p. 84). Schumpeter described innovation as born of creative thinking and asserted that entrepreneurs who elected to innovate from within instead of to invent anew were "first movers who could realize significant monopolistic power and profits" (Hospers, 2005, p. 23).

The effects of this process of creative destruction, Schumpeter argued (as cited in Hospers, 2005), take time to emerge, are organic, and contextual. Economists, he suggested,

must judge the performance of a particular innovation as it unfolds across time and in the context of a particular industry's or organization's environment. How long it takes for innovation to unfold, wrote Schumpeter, "depends upon the degree of creative destruction the innovations in question induce" (Hospers, 2005, p. 23). Schumpeter (1950) foretold the demise of capitalism in the long-run, arguing that large businesses would eventually stifle innovation and entrepreneurial efforts, marginalizing those individuals who are unable to prosper as outsiders to the system. As this occurred, government intervention would increase. Schumpeter believed that these three factors combined may cause capitalism to fail as a result of its own success, eventually giving way to more socialistic economic systems, "in which a few huge corporations will run the economy in an efficient but mechanical way" (Hospers, 2005, p. 24).

Freeman's economics of industrial innovation. Freeman (1982) described Schumpeter's (1950) theory of creative destruction as consistent with realities he had observed within innovation-driven cycles of profitable growth. Entrepreneurs, he argued, invest in the innovations of scientists and inventors in order to create jobs and organizational growth opportunities. Their work, when successful, is eventually imitated, creating competition within a given marketplace. As this competition takes hold, pricing becomes a paramount concern, profit margins become thin, and a market recession eventually occurs. The innovation-driven cycle then begins anew, Freeman (1982) argued, driven by yet new waves of innovation and the desire for growth, organizational, or social change.

Freeman (1994) surveyed the empirical literature on the diffusion of innovation at the level of an organization and industry and found that "it is now possible to make . . . reliable generalizations about innovations and their diffusion, both in specific industries and for the entire economy" (p. 466). The literature, Freeman said, consistently described innovation as a

continuous process that was fueled by an organization's ability to learn from its own experiences and from input received from its partners, customers, other organizations, and competitors.

Freeman and Soete (1997) found that the literature on innovation could be characterized by two predominant themes. The first, which they described as the "science-push" (p. 200) theme, consisted of studies that found innovation to originate and subsequently be diffused from a base of scientific research. The second predominant theme, which they described as "market-pull" (p. 200), consisted of studies of the market forces, or necessities that compel organizations to innovate. Such innovation, these studies suggest, is born of marketplace gaps. That is, when existing products and services do not satisfy the needs of a given marketplace.

Innovation theorists, Freeman and Soete (1997) observed, tended to work with innovation from the perspective of either the science-push theme or the market-pull theme, but not both. Freeman and Soete took a different position. They suggested that these two themes "may be complementary and not mutually exclusive" (p. 200). Marketplaces, they said, complement R & D efforts by creating - and sometimes by not creating - specific demands on industry. As such, they reasoned that innovation is:

a two-sided or coupling activity . . . On the one hand, it involves the recognition of a need or more precisely, in economic terms, a potential market for a new product or process. On the other hand, it involves technical knowledge, which may be generally available, but may also often include new scientific and technical knowledge, the result of original research activity . . . The professionalization of industrial R & D represents an institutional response to the complex problem of organizing this matching. (p. 200)

Because both market demands and technological capacity constantly changed, innovation efforts will always be uncertain (Freeman & Soete, 1997). An organization's ability to innovate,

Freeman and Soete (1997) said, was therefore influenced by three factors. First, those organizations best able to monitor this changing technological landscape have advantages in their ability to move quickly in response to opportunities. Second, organizations that are closely connected to, and able to understand the needs of, their customers can identify potential marketplace gaps that invite or demand innovation. Third, strong, imaginative leadership is essential if organizations intend to identify, bridge, and then act on these technological and market-based possibilities.

Writing at the end of the 20th century, Freeman and Soete (1997) concluded that those organizations that had been most successful with their innovation strategy could be characterized as having strong, well-financed, internal R & D programs. They created competitive advantages by patenting ideas generated through research and had the tendency to be imaginative in terms of new market possibilities. They were willing to take risks as new market opportunities were identified, and were closely connected to such markets in order to monitor and influence customers. Leadership and communication within such organizations tended to be strong, coordinated, and in sync with both external scientific communities and customers. The aforementioned characteristics, Freeman and Soete hypothesized, “are the essential conditions for successful technological innovations” (p. 203).

Abernathy’s, Utterback’s, and Clark’s models of innovation. Utterback and Abernathy (1975) examined innovation in process and product development and proposed a model through which such innovation could be considered within the context of an organization’s existing environment and its strategy to compete and grow. They distinguished characteristics of typical process and product development innovation but suggested that both are enhanced incrementally, in close alignment with an organization and its maturity, “over time in a

predictable manner” (p. 427). Such innovation tended to occur, they said, with an emphasis first on performance, then on variety, and eventually on standardization and costs.

Process development innovations span a continuum over time and range from uncoordinated, to segmental, and eventually, to systemic (Utterback & Abernathy, 1975). Uncoordinated process innovations are those that occur with great frequency, early in an organization’s existence, as markets expand and are redefined. Uncoordinated process innovations are fluid and responsive to changes in the market environment. Segmental process innovations are those applied within mature integrated systems for the purpose of improving specific segments of the process. Systemic process innovations often involve complete process redesign brought on by the development of new technology or dramatic, market-driven requirements changes. Regardless of their type, Utterback and Abernathy (1975) argued, process innovations tend to evolve incrementally “toward higher states of productivity” (p. 426).

Product development innovations are aligned with an organization’s competitive and growth strategy and typically manifest as of three types: performance-maximizing, sales-maximizing, and cost-minimizing (Utterback & Abernathy, 1975). Performance-maximizing product development innovations tend to be driven by market demands during the early phases of a product’s life cycle when “the rate of product change is expected to be rapid” (p. 428) but also uncertain. Product development innovation at this stage is driven by “the individual or organization that is intimately familiar with [customer] needs” (p. 428). Sales-maximizing product development innovations emerge as market ambiguity fades. The need to differentiate products when faced with enhanced competition is the dominant paradigm at this stage in a product’s life cycle. As a result, Utterback and Abernathy (1975) observed, more product variation exists within a market and only innovations that yield improvement which are “easy for

the customer to evaluate and compare” (p. 429) tend to be pursued. Cost-minimizing product development innovations emerge as a product market matures. At this stage in a product’s life cycle, competition occurs largely on price. In order to minimize costs, Utterback and Abernathy argued, organizations frequently make systemic changes by applying innovations developed or provided by others (e.g., equipment suppliers, third party service providers, etc.).

Utterback and Abernathy (1975) concluded that both the source and type of innovation an organization can embrace varies according to its level of process or product maturity and its overall organizational development. For example, innovation early in an organization’s process development might emerge from front-line users who know a processes strengths or weaknesses through first-hand experience. As the same process matures, however, innovation is more likely to emerge from systems or technology experts who have a broader perspective on external areas of opportunity.

Incremental and radical innovation. Abernathy and Utterback (1978) distinguished incremental and radical innovation in the context of organizational development and found that an organization’s capacity and methods used to embrace innovation also aligned with its stage of development. Organizations pursue incremental innovation, they said, when attempting to improve highly integrated systems where even minor changes would ripple across components and increase the overall cost of change. Incremental innovations tend to improve the current technological and product strategy, require less capital and human investment than more aggressive alternatives, and can be more predictable (Turut & Ofek, 2012). Incremental innovation builds upon itself over time, creating a cumulative productivity improvement and yielding specialized systems.

Organizations pursue radical innovation in order to improve environments where performance criteria are ambiguous or in flux (Abernathy & Utterback, 1978). Radical innovations are those that target consumer needs in markets that are emerging or to some degree unknown. Radical innovation strategies employ new technologies, often create new consumer benefits, and have the potential to render existing products or services obsolete. As such, organizations that pursue radical innovations have the potential to realize strong returns and rewards on their investment. However, because their effects on technology and market conditions are uncertain, radical innovations also have the potential to be risky (Turut & Ofek, 2012).

Architectural, niche, regular, and revolutionary innovation. Abernathy and Clark (1985) studied innovation in the context of its capacity as a catalyst for change and observed that Innovation is not a unified phenomenon: some innovations disrupt, destroy and make obsolete established competence; others refine and improve. Further, the effects of innovation on production systems may be quite different from their effects on linkages to customers and markets. (p. 4)

Innovation, Abernathy and Clark (1985) suggested, typically manifests as one of four types - architectural, niche, regular, and revolutionary. Architectural innovations allow organizations to connect with users and markets in ways that are new or different than established means. Such innovations establish “the broad framework within which completion will occur and develop” (p. 7). Niche innovations create new market opportunities by strengthening existing technologies to improve their applicability. Through niche innovation, “an otherwise stable and well specified technology is refined, improved, or changed in a way that supports a new marketing thrust” (p. 10). Regular innovations are the incremental changes to

existing technologies and products that build upon existing realities over an extended period of time. These innovations serve to “entrench existing [organizational] skills and resources” (p. 12) and, cumulatively, provide competitive advantages through enhanced productivity and process capacity. Revolutionary innovations are those that establish new technical competencies that can be applied to existing markets. Such innovations have the potential to disrupt markets by rendering existing means of production obsolete.

Abernathy and Clark (1985) developed a framework to help leaders identify, apply, or react to innovation according to its type and place along continuum of potential impact that ranged from conservative to radical. Conservative innovations, they suggested, preserve and enhance an organization’s existing competencies and can result in competitive advantages by distinguishing an established organization’s products and services from those of competitors or by increasing a barrier to entry in a given marketplace. Abernathy and Clark described radical innovations as the type that “disrupts and destroys” (p. 6) an organization’s existing competencies. They cited Schumpeter’s theory of creative destruction to describe such radical innovations “the vehicle for growth” (p. 6). And foreshadowing Christensen’s theory of disruptive innovation, Abernathy and Clark suggested that radical innovation supports the “redefinition of what is required to achieve a competitive advantage” (p. 6). Where “disruption is both deep and extensive” (p. 6), they said, “such innovation creates new industries” (p. 6).

Rogers diffusion of innovation theory. Rogers (2003) was less concerned with defining innovation or with descriptions of its type, circumstances, or influence on markets than his contemporaries. Instead, Rogers studied how innovation actually takes hold among consumers and within communities. His diffusion of innovation theory is widely regarded and has been used extensively across industries and disciplines. Rogers defined diffusion as “the process by which

an innovation is communicated through certain channels over time among the members of a social system” (p. 37) and observed that diffusion communication is specifically concerned with phenomenon that represent a “new ideal” (p. 37). Rogers proposed and, with input and findings from thousands of empirical studies spanning more than 40 years, has refined a multi-faceted diffusion of innovation theory. The theory holds that specific attributes of an innovation determine its rate of adoption. Through refinement of the theory over time, Rogers has also offered a framework for evaluating what he describes as an “innovative-decision process” (p. 41) from the perspective of the types of people who adopt the innovation.

The diffusion of an innovation, Rogers (2003) argued, follows a general, consistent, observable, process over time. Rogers identified five common types of people who adopt an innovation and suggested that the distribution of these types occurs consistent with an S-shaped growth distribution curve. An S-shaped distribution curve represents a pattern of growth that begins slowly, accelerates rapidly once a critical mass of adoption has been achieved, but then declines as a target population becomes saturated. Rogers’ five types of innovation adopters include: innovators, early adopters, the early majority, the late majority, and laggards.

Innovators, Rogers (2003) observed, represent the first 2.5% of people to adopt a given innovation. Innovators tend to be interested in new ideas, are venturesome, and are willing to take risks. They are often attracted to an innovation on the merits of its newness alone. Early adopters account for the next 13.5% of a population to adopt an innovation. Early adopters are frequently opinion leaders who respect and are aware of a need for change. Early adopters are attracted to innovation because they enjoy the opportunity to embrace and share new ideas. Members of what Rogers described as the early majority are the next group that can be expected to embrace an innovation. They are deliberate in their thinking and adopt innovation only after

they have been convinced of its merits. They tend to move sooner than the average person to adopt an innovation but will need to see evidence of its success before making a commitment. Following innovators and early adopters, this early majority accounts for the next 34% of a population that can be expected to adopt a particular innovation. The three groups together account for 50% of an innovation's diffusion within a community.

The second half of an innovation's adoption occurs as members of what Rogers (2003) described as the late majority and laggards eventually embrace the change. The late majority is often skeptical of change and must see that a majority of their peers have adopted an innovation before they are willing to try it themselves. Rogers defined the late majority as the next 34% to adopt a change once the innovators, early adopters, and early majority have done so. The final group to adopt an innovation accounts for the final 16% of a population. These laggards tend to be traditional and very conservative. They are skeptical of any change and may only adopt an innovation under pressure or when presented with arguments that cause them to fear adherence to the status quo.

In relative terms, Rogers (2003) said, those who adopt an innovation earlier than others tend to have achieved higher levels of formal education, have higher social status, enjoy greater potential for upward mobility, and "have generally higher socioeconomic status than do later adopters" (p. 44). Those who adopt an innovation earlier than others, Rogers observed, also differ from later adopters along personality traits (e.g., they may have a greater tolerance for ambiguity), tend to be more social and interconnected, and hold a more cosmopolitan world view. As such, these earlier adopters tend to have greater access to change agents and are more likely to proactively seek information than those who adopt an innovation later.

An innovation's rate of diffusion within a population is determined according to perceptions of its attributes. Specifically, Rogers (2003) suggested, perceptions of the innovations advantages relative to the status quo, its compatibility, its complexity, its trialability, and its observability all influence how quickly a given population will adopt the change. An innovation's advantage relative to the status quo is determined according to how well it improves upon that which it replaces. Its compatibility involves the innovation's consistency "with the existing values, past experiences, and needs of potential adopters" (p. 42). Both advantages and compatibility are positively correlated with an innovation's rate of adoption. An innovation's complexity is assessed simply according to how easy or difficult it is to understand or use. An innovation's complexity is negatively correlated with its rate of adoption. Triability refers to an innovation's potential to be experimented with for a limited period of time. Rogers observed that triability is positively correlated with an innovation's rate of adoption. Finally, the ability for an innovation to be observed or simply visible to others is also positively correlated with its rate of adoption.

Consumers and organizational leaders engage in what Rogers (2003) described as the innovative-decision process as they become aware of an innovation, develop an opinion about that innovation, and ultimately decide to adopt or reject the innovation. The process evolves through five stages: a knowledge stage, a persuasion stage, a decision stage, an implementation stage, and a confirmation stage. During the knowledge stage, the innovation is encountered for the first time and understood by potential consumers. An opinion of the innovation is developed during the persuasion stage. A choice to adopt or reject an innovation is made during the decision stage. And innovation is put into practice and used during the implementation stage. When positive feedback is encountered during the confirmation phase, consumers and

organizational leaders may elect to stick with a given innovation. However, they may also choose to reject an innovation if first-hand experiences or negative messaging at this stage are inconsistent with expectations formed during the persuasion or decision stages.

Christensen's Theory of Disruptive Innovation

Christensen (1997) examined companies that had failed to retain top positions in their industries when confronted with innovative competition and observed key differences in their commitment to what he described as sustaining and disruptive technologies. Specifically, Christensen observed that market leaders were compelled to allocate organizational resources in support of sustaining technologies, those innovations that would satisfy the needs of their most significant customers and help drive profitable, up market growth. However, the same responsibilities and forces that compelled these organizations to invest in sustaining technologies, Christensen argued, prevented them from simultaneously investing in the type of disruptive technologies that would meet the needs of new or emerging markets. The market leaders, Christensen observed, all seemed to lack “downward vision and mobility” (p. 24) and “were held captive by their customers, enabling attacking entrant firms” (p. 24). Market leaders, Christensen theorized, were therefore vulnerable to competition from what he described as disruptive innovators, organizations or entrepreneurs that emerge to offer products and services to meet the needs of these poorly understood, new, or even non-yet-existent markets.

These observations led Christensen to propose and subsequently refine (Christensen & Raynor, 2003) a theory of disruptive innovation. The theory is widely regarded and has been studied and reported on extensively (Bennett, 2014; Christensen & Eyring, 2011; Christensen & Raynor, 2003; Lepore, 2014; Schmidt & Druehl, 2008; Weise & Christensen, 2014). Disruption innovation, Christensen (2014) theorized, is “a process by which a product or service takes root

initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors” (para. 1). The theory posits that disruptive innovations can transform entire industries “by introducing simplicity, convenience, accessibility, and affordability where complication and high cost are the status quo” (Clayton Christensen Institute, 2014, para. 2).

Forces that invite disruption. Organizations must honor and fulfill diverse responsibilities while competing for consumers’ attention and business in a complex, fast-moving, global environment. Organizations are beholden to a variety of key stakeholders – customers, employees, investors, partners, regulatory agencies, etc. – and must generate sufficient operational profit to both grow their business and maintain competitive marketplace advantages. In some organizations, the success or failure of a given initiative has the potential to make or break the business.

Christensen and Raynor (2003) cited Pfeffer and Salancik’s theory of resource dependence and their own observations to suggest that an organization’s customers and investors limit its freedom of action and actually control its resources. This happens because organizational leaders appropriately and primarily make decisions with the interests of these key, external stakeholders in mind. High-performing organizations, Christensen and Raynor said, often ignore ideas designed to serve the needs of small or emerging markets because these markets tend to offer returns that would fail to satisfy their most important stakeholders. If an organization’s most profitable customers do not desire a particular product or service, Christensen (1997) observed, it is hard for its leaders to make a business case in support of allocating limited organizational resources to new directions.

Additionally, Christensen (1997) argued that an organization's capabilities in one setting create boundaries that limit its ability to perform effectively in other settings. That is, organizations may struggle to apply their existing capabilities in new or different ways when faced with market disruption. Christensen suggested that three factors define an organization's capabilities – its resources, its processes, and its values.

Resources, Christensen (1997) said, are assets that can be acquired, deployed, or shed. An organization's employees are resources, as are its partnerships, its intellectual property, its facilities and equipment, its cash, and its brand. An organization's resources are visible and are typically more flexible than its processes and values.

Christensen (1997) described processes as the patterns and systems organizations use to convert their resources into products and services. Processes may be formal or informal, involve interaction and decision-making, and yield something of value to the organization. They are designed to work efficiently in repeatable ways to accomplish specific tasks.

An organization's values are “the criteria by which decisions about priorities are made” (Christensen, 1997, p. 164). Values establish standards for decision-making and tend to evolve along two dimensions. The first values dimension is one that prioritizes gross margins, or returns on investment. As organizations grow, gross margins that were at one point acceptable become insufficient as higher returns are prioritized and valued. The second values dimension evolves in a way that prioritizes growth. The larger an organization and its markets become, the more essential it is for the organization to maintain a consistent rate of growth. As such, Christensen (1997) suggested, large organizations “literally lose the capability to enter small emerging markets” (p. 166).

Sustaining innovations. Successful organizations are highly motivated to focus on, and invest in, what Christensen (1997) described as sustaining innovations. Sustaining innovations are those changes, technological enhancements, or modifications that take products and services to new, improved levels of performance (Christensen & Raynor, 2003). Sustaining innovations are designed to meet the needs of an organization's existing, high-end customers. They may do so in an incremental way as the effects of small innovations compound over time. Sustaining innovations may also be more comprehensive, or radical, in nature, transforming products and services. Either way, sustaining innovations are prioritized by most organizations as they are designed to help the organization's most profitable customers to achieve their most urgent, future goals (Christensen, 1997).

When an organization's resources, processes, and values align with its appropriate interest in creating sustaining innovations to meet the needs of its most profitable customers, the organization may be blind to, or simply disinterested in, opportunities that exist within low-end or emerging markets (Christensen, 1997; Christensen & Raynor, 2003). After all, the purpose of a sustaining innovation is to create better products and services than will ultimately sell for more money than their predecessors and satisfy important customers. There is very little incentive for most organizations to focus on low-end or emerging markets when growth and profits within mainstream markets are strong (Christensen, 1997).

Over time, however, the demands and realities of a given marketplace will shift. This happens as technological innovation outpaces customers' ability to absorb advancements (Christensen, 1997). This reality means that customers themselves may be blind to innovations they do not yet know they need. Christensen observed that organizations that consistently prioritize sustaining innovations at the expense of low-end or emerging market opportunities

may overshoot the demands and realities of their existing market, providing product features and benefits that customers don't necessarily need or want. When this happens, Christensen suggested, a market may be ripe for disruption (Christensen, 1997; Christensen & Raynor, 2003).

Disruptive innovations. Disruptive innovations are those that seek to change a competitive landscape by introducing affordable, simple, flexible, and/or more convenient products and services (Christensen, 1997). Disruptive innovations tend to emerge through products and services that may initially be unimportant to mainstream customers. In fact, such innovations may actually result in worse performance as compared to the products and services available in mainstream markets (Christensen, 1997; Christensen & Raynor, 2003). But because such innovations are not aimed at satisfying a market's most demanding customers, the performance of disruptive products and services need only be minimally viable to be sufficient (Christensen & Raynor, 2003). Christensen's (1997) theory of disruptive innovation suggests that such disruptive products and services have the potential to attract entirely new customers or those customers who may have been on the fringe or only loosely associated with mainstream markets (Christensen & Raynor, 2003).

Christensen (1997) described the consistent characteristics of disruptive innovation as two fold. First, disruptive innovations have, by definition, no value in mainstream markets. Their defining attributes do not appeal to mainstream, high-end customers. However, their attributes, Christensen suggested, "become their strongest selling points in emerging markets" (p. 190). Second, disruptive innovations "tend to be simpler, cheaper, and more reliable and convenient than established products" (p. 190). As markets with multiple providers mature, consumers tend to make choices based on how convenient products and services are to acquire. When competition on convenience does not yield a clear market leader, consumers choose based on

convenience and price. Disruptive innovations, according to Christensen, tend to have competitive advantages on both fronts.

Organizations that have succeeded with disruptive innovations worked to establish new markets where none was originally assumed to exist. They did so, Christensen (1997) observed, by identifying key attributes of their products and services and then forging new markets by finding customers who valued the qualities of their disruptive innovation as they were when initially developed. They did not attempt to transform their innovations to meet the needs of an already established market. They did not over-develop to push for higher performance or profits. They went to market with a minimally viable product or service that satisfied consumer needs in a manner that was easier, more affordable, more reliable, and more convenient than the competition (Christensen, 1997; Christensen & Raynor, 2003).

Once disruptive innovators are able to establish a foothold within emerging or low-end markets, Christensen (1997) argued, they become well-positioned to drive products and services improvements that will allow them to move up market, attracting customers from the original mainstream market as they do. This happens because these disruptive innovators are able to improve their minimally viable products and services on a rapid pace. Their overhead is typically lower than that of incumbent organizations, as well. This allows disruptive innovators to be satisfied and successful with gross profit margins and rates of growth that would be unattractive to mainstream market leaders (Christensen & Raynor, 2003). Large, market leading incumbents may even ignore the up market strategies and growth of disruptive innovators because the comparatively small markets they pursue, Christensen said, cannot satisfy the profit needs of large companies (Christensen, 1997; Christensen & Raynor, 2003).

New market strategies. Disruptive innovators have another advantage over incumbent organizations that allow them the opportunity to move up market once their disruptive innovations have established a foothold. Disruptive innovators have different value networks than those of incumbent market leaders. Christensen and Raynor (2003) defined a value network as “the context within which a firm establishes a cost structure and operating processes and works with suppliers and channel partners in order to respond profitably to the common needs of a class of customers” (p. 44). Value networks, they wrote, are powerful determinants. They influence an organization’s strategy relative to innovation and “shape the rewards and threats that firms expect to experience through disruptive versus sustaining innovations” (p. 44).

As discussed previously, market incumbents are incented through their customers, investors, and value networks to prioritize and invest in sustaining innovations strategies. As a result, market incumbents maximize and protect their value networks to generate profits from high-end customers who are able and willing to pay for high-end performance. They will compete at all costs against market entrants that seek to compete on the sustaining innovation playing field. This has the effect, however, of leaving disruptive innovators free to pursue what Christensen and Raynor (2003) described as “low-end disruptions” (p. 51) mainstream value networks with products and services that could be described as “good enough” (p. 51). Such innovations may be characterized by a no-frills, minimal, discount price approach and may use new operational or financial models to achieve lower costs as well as lower profit margins. They succeed despite low profit margins as they attract a high volume of business from the low-end of an established market. Christensen and Raynor (2003) argued that market incumbents are frequently incented to “flee from a low-end disruptor” (p. 47) because their value network

realities are such that cost to compete for such low profit margins would yield insufficient returns on investment.

New market disruptions actually “compete with non-consumption” (Christensen & Raynor, 2003, p. 45) by offering affordable, simple, convenient products that attract consumers who had “not owned or used the prior generation of products and services” (p. 45) or who “historically lacked the money or skill to buy and use the product” (p. 51). Disruptive innovators who seek to exploit new market disruptions must be prepared to do so with low profit margin per units sold within what will initially be small markets. Their rewards, however, could be substantial as disruptive products and services attract both new customers and mainstream market customers who are attracted to the new market’s simplicity or flexibility (Christensen & Raynor, 2003).

The premise of Christensen’s (1997) theory of disruptive innovation is that innovators who are willing to explore markets that are poorly understood or that don’t yet exist can reap strong, first-mover advantages as they offered products or services that create or attract new markets. Christensen also argued that leaders within established, market leading organizations must take such disruptive threats seriously while simultaneously meeting the growth and profit expectations of their existing customers and investors. They could do so, he suggested, by first understanding that their organizations’ “capabilities, cultures, and practices are valuable only in certain conditions” (p. 225). From there, Christensen suggested, organizations must work to align their existing value networks and customers in a manner that would allow work to occur on both disruptive and sustaining innovations.

Christensen and Raynor (2003) have suggested that organizations can and should seek to disrupt themselves by investing in new business models that deploy organizational resources,

processes, and values creatively, appropriately, and in ways consistent with the themes described previously. They provided a checklist of sorts, designed to help decision-makers maximize the likelihood that their organizations could “become the disruptors rather than the disruptees” (p. 18). Specifically, Christensen and Raynor suggested that organizational leaders pursue disruptive strategies and markets that:

- Incumbent market leaders have ignored or grown past.
- Allow the organization to compete against non-consumption or at the low-end of existing markets.
- Create products and services that do “the jobs customers are trying to get done” (p. 289) in more convenient or affordable ways than presently available.
- Are consistent with the competencies and market realities that will yield profits in the future, not the past.
- Are led by problem-solvers who have experience with challenges similar to those expected to be encountered in the new venture.
- Generate profit quickly while positioning for future growth.

Chapter Summary

This chapter has presented select concepts, findings, and theories, from the literature on this study’s conceptual and theoretical foundations: competency-based education and disruptive innovation. Competency-based education was discussed in context of its American origins and as deployed within contemporary models. Next, a brief review of select innovation theories was presented. The chapter concluded with an in-depth description of Christensen’s (1997) theory of disruptive innovation.

Policy makers at all levels of American government have demanded evidence of innovative thinking and frequent experimentation with new learning paradigms from the nation's colleges and universities (Bogaty, 2013; Obama, 2009). Despite its potential to transform, or at least influence, the strategies colleges and universities use to meet the needs of today's learners, few modern empirical studies of competency-based education exist. Many of the recent observations and discussions of competency-based education have been published within industry trade literature and popular press forums.

The study presented here, guided by the exploratory, qualitative research methodology described in Chapter 3, has the potential to address gaps of currency, context, disruptive innovation potential, and depth of understanding that exist within the academic literature on competency-based education. The study may also contribute to the already rich literature on disruptive innovation theory by offering a similar discussion of competency-based education as a potentially disruptive innovation in higher education.

Chapter 3. Methods

The purpose of this qualitative, exploratory study was to understand and describe the competency-based education practices of American higher education institutions within the context of Christensen's (1997) theory of disruptive innovation. Competency-based education practices are those that seek to measure and recognize the attainment and mastery of competency independent of time, place, or source or learning (Johnstone & Soares, 2014; Klein-Collins, 2012; Mendenhall, 2003, 2012). Competency-based education proponents have described the practice as an important education innovation (LeBlanc, 2013, 2014) that seems poised to emerge within many college and university environments given its ability to drive greater efficiency and effectiveness, enhance organizational sustainability, and improve student outcomes (LeBlanc, 2013; Mendenhall, 2013).

Administrators (LeBlanc, 2014; Mendenhall, 2013), policy leaders (Bergeron, 2013; Duncan, 2014), and practitioners (Competency-Based Education Network, 2014; Klein-Collins, 2012) alike have called upon postsecondary institutions to experiment with competency-based education. While many will heed this call, few empirical studies of postsecondary competency-based education exist to guide them. Recent observations and discussions of competency-based education have primarily been published within industry trade literature and popular press forums. And while coverage of the practice within these environments has been extensive, such reports have frequently been offered in the context of an education reform agenda or aligned with a particular university brand or practice. Institutional administrators, students and faculty, and others may benefit from this empirical study and its discussion of current competency-based education practices.

This study sought to answer one central research question and four related sub-questions. The study's central research question was: To what degree has competency-based education served as a disruptive innovation within American postsecondary education? Four associated sub-questions also guided the research. They were:

- How have American postsecondary education institutions deployed competency-based education practices?
- What characteristics of competency-based education practices deployed by American higher education institutions are common or distinct?
- What criteria have been used to evaluate competency-based education practices deployed by American higher education institutions?
- What outcomes have been achieved by American higher education institutions that have deployed competency-based education practices?

Research Design

This study employed a qualitative, exploratory research design in order to achieve its aforementioned purpose. Qualitative research methods are appropriate when one seeks to understand emerging realities in order to derive the meaning of a given social or human phenomenon (Creswell, 2014) or to “make sense of the world in a particular way” (Richards & Morse, 2013, p. 4). Qualitative research is characterized by an inductive reasoning approach (Creswell, 2014) and can provide insight as to the meaning and nature of things (Berg, 2001). Qualitative researchers create meaning by working with observable information (Richards & Morse, 2013) in such a way as to be able organize and discuss their data in the context of general themes (Creswell, 2014). Qualitative research is systematic and replicable by future researchers,

characteristics which are important for the purposes of testing theory or discussion of key findings (Berg, 2001).

Effective qualitative research integrates research questions, data, and data analysis in a consistent manner; “the question goes with the method, which fits appropriate data collection, appropriate data handling, and appropriate analysis techniques” (Richards & Morse, 2013, p. 1).

Qualitative research is further enhanced when the research design is congruent with the researcher’s epistemological and ontological view of the studied phenomenon (Richards & Morse, 2013).

This study’s epistemological, or knowledge gathering, process was interpretivist. The researcher sought to understand postsecondary competency-based education qualities and methods as presented in various publically available artifacts, prominent industry reports, and through his own professional experiences. Its ontological framework was constructivist in nature as the researcher was guided by broad, general questions. The researcher relied upon his own experiences and relationship with study data to “generate or inductively develop a theory or pattern of meaning” (Creswell, 2014, p. 8) regarding the competency-based education practices of American colleges and universities.

The study’s researcher interpreted data, created meaning, and derived potential implications of postsecondary competency-based education by working with content found within official, publically available artifacts. Study artifacts served as an appropriate, comprehensive, and readily available proxy for the perspective and experiences of a wide variety of individuals, each representing a diverse group of postsecondary institutions. Prominent industry reports also served as study data. Berg (2001) described this type of research as unobtrusive and argued that unobtrusive methods represent “an innovative strategy for collecting

and assessing data” (p. 189) that “in some instances . . . provide access to aspects of social settings and their inhabitants that are simply unreachable through any other means” (p. 189).

Bryman and Bell (2011) suggested that content analysis consistent with the unobtrusive methods proposed here can be transparent, specifically with regard to their use of coding and purposeful sampling that can be replicated by other researchers. Such methods may also allow for a degree of longitudinal analysis that can be employed across a variety of settings in a flexible manner.

The qualitative, exploratory research design employed here was appropriate for the study of postsecondary competency-based education practices. Richards and Morse (2013) suggested that qualitative research methods are appropriate when a study’s “purpose is to understand an area where little is known or where previously offered understanding appears inadequate” (p. 27). Qualitative research methods are also appropriate, Richards and Morse said, when a study’s “purpose is to make sense of complex situations, multicontext data, and changing and shifting phenomena” (p. 28).

Postsecondary competency-based education practices have emerged in modest numbers recently and are offered in diverse environments (Johnstone & Soares, 2014). Many of these programs have been developed “on the margins” (Merisotis, 2013, para. 4) of higher education, by innovators who have experimented with new student service models. Their experiences and the comparative newness of the practice suggests that host institutions and their people may be changing or evolving models to better align with performance feedback or with market and student realities. The use of an exploratory research design allowed the researcher to examine these new models and methods in order to develop findings and discussion that will contribute to the modern literature on competency-based education. The study’s findings may also contribute to the substantial literature on disruptive innovation theory (Christensen, 1997).

Competency-based education has been described by some (e.g., Soares, 2012; Weise & Christensen, 2014) as a disruptive innovation. Disruptive innovations are said to be those that emerge initially at the low end of existing markets or within new markets (Christensen, 1997). Such innovations, once established, have the potential to transform industries or to displace incumbent market leaders. The characteristics of new and low end markets are often ambiguous and poorly understood. And the specific strategies and tactics employed by the innovators who ultimately succeed in such markets vary (Christensen & Raynor, 2003). Practitioners, policy makers, and administrators alike may specifically benefit from this study's central focus on the disruptive capacity of competency-based education in the context of existing markets, new opportunities, or the higher education industry at large.

The Role of the Researcher

Because qualitative research is guided by a researcher who works intimately with data in a direct, interpretative way to identify themes, Creswell (2014) suggested that qualitative researchers explicitly describe their personal backgrounds, including prior experience with the topic, personal values, and potential biases. A statement such as this from a researcher will help readers, Creswell said, to understand the connection between the researcher and his study. Such a statement should be explicit, Creswell argued, about how the researcher's personal experience or history might inform or influence interpretations that are essential to the study.

Consistent with Creswell's (2014) guidance, the researcher reports that he was employed in the delivery of postsecondary competency-based education as this study was initially proposed and during the study's early stages of data collection. Furthermore, the researcher's work with competency-based education has primarily impacted students who could be described as underserved by traditional postsecondary methods. Like the researcher himself, such students

often enrolled in college as working adults, have tended to have family responsibilities that required their attention beyond work and school, were frequently the first member of their family to pursue a postsecondary credential, and/or have resided in rural communities characterized by limited access to postsecondary education facilities. Many of the students who have benefited from the researcher's employment-related duties have also shared other demographic circumstances with the researcher (e.g., income status, age, etc.).

As a result of both his professional experiences and his personal history, the researcher discloses a bias in that he believes many of the nation's postsecondary education delivery models are inconsistent with the realities of 21st century students and, in particular, with the unique needs and realities of working adults. The researcher feels that innovative practices that have the potential to provide more efficient, effective, and personalized postsecondary experiences consistent with the realities of today's learners should be pursued and employed. Finally, the researcher discloses a potential conflict of interest in that he was employed as an administrator at Western Governors University (WGU) for 13 years, an institution whose artifacts and programs were examined as part of the proposed study. That work ended during this study's data collection phase as the researcher pursued a new employment opportunity.

The researcher acknowledges that his employment history, his professional experiences, and his personal values may introduce bias within this study in several ways. For example, the researcher's personal history and his long-term experience with the practices employed by WGU have the potential to introduce a confirmation bias within the study. The researcher's organizational accountability and innovation values may also influence his ability to objectively perceive or interpret practices in the context of an organization's culture or environment.

Methodological Assumptions and Limitations

Bryman and Bell (2011) cautioned that the use of artifacts as proxy for the perspective of people in qualitative study may present significant methodological assumption and limitations that affect a study's validity. Specifically, they argued, one cannot safely assume that artifacts are an accurate reflection of organizational realities. Artifacts must be examined, Bryman and Bell suggested, in terms of both the context in which they were produced and the audience for which they were created. Artifacts are produced, they said, "in order to convey an impression, one that will be favorable to the author and those whom they represent" (p. 559) and should not be considered as "firm evidence of what they report" (p. 559).

The researcher acknowledges that the use of artifacts as proxy for the perspective of people is both an assumption and potential limitation of the study. The researcher believes, however, that this study's artifacts provided a type of richness in terms of both their depth and availability in support of this study that was appropriate and unique. The official, public nature of examined artifacts, as well as the regulatory requirements and potential consequences that govern the higher education industry are such that artifacts were subject to public scrutiny or regulatory review. Too, the ability to compare a large number artifacts across a wide variety of institutions aided in the identification of artifacts that appeared to describe phenomena in a biased or incomplete way.

Sources of Data

To understand and describe the competency-based education practices of American higher education institutions, the researcher interpreted and generated qualitative data through the collection and systematic content analysis of relevant, publically available artifacts. Study artifacts were limited to those that were official in nature and that had been authored, received,

published, maintained, or approved by those individuals or organizations with first-hand knowledge of, experience with, or accountability for a particular competency-based education program. Artifacts available to the researcher and relied upon during this study included:

- Official program web sites, catalogs, or marketing materials;
- Official program reports, training, policy, or procedural materials;
- Official program press releases or public announcements;
- U.S. Department of Education applications, reports, or other filings;
- U.S. Securities & Exchange Commission reports or other filings;
- Accreditation-related documents, reports, or other filings;
- Institutional governance documents, reports, or other filings;
- Reports, blogs, opinion: editorial pieces, presentations, or speeches.

An additional source of information may have been artifacts created by students of the competency-based education programs examined here. The researcher acknowledges that the perspective of students on the characteristics, effectiveness, and potential of competency-based education is potentially a rich source of data, particularly with regard to questions of student outcomes and program evaluation criteria. The researcher believed, however, that student-generated artifacts should be excluded from consideration in the present study for three reasons. First, while students can be said to have first-hand program experience, their exposure and perspective may be limited or biased by factors inherent of their own progress, goals, or circumstances. Second, matters related to artifact context, intended audience, and student privacy may introduce complexity within the study's proposed data collection and analysis procedures. Third, publically reported evidence of student outcomes or program evaluation criteria may be available through several of the sources of data proposed previously. The proposed study sought

to understand and describe the competency-based education practices of American higher education institutions within the context of disruptive innovation theory. Future researchers may wish to examine the experiences of students enrolled in competency-based programs.

Study Population and Artifact Gathering Plan

This study sought to examine the competency-based credentialing programs offered by American colleges and universities. To be eligible for inclusion within the study, an offering must have met all of the following criteria:

- The program is offered by a regionally accredited American college or university.
- The program itself has been approved by a regional accrediting agency.
- The program is described and specifically marketed by its provider as a competency-based degree, certificate, or credentialing program.
- The program serves enrolled students or is actively recruiting future students.

When this dissertation research was proposed and approved by the researcher's faculty committee in September 2014, the researcher personally identified 39 colleges and universities that offered active competency-based education programs which met the eligibility criteria described previously. He identified an additional 23 institutions that had publically disclosed their near-term intention to offer such programs. To identify these institutions, the researcher relied upon engagement with his personal and professional networks, Internet searches, and email correspondence with representatives of the nation's six regional accrediting agencies and the U.S. Department of Education. Additionally, the researcher examined industry news accounts, press releases, and the academic literature to identify eligible institutions and programs.

In February 2015, a prominent industry research and advisory firm, Eduventures, released its own study that identified and described 62 accredited institutions it believed to be engaged in the delivery of active competency-based education programs (Eduventures, 2015). Also in February 2015, The Competency-Based Education Network (C-BEN), an institutional network formed with financial support from The Lumina foundation to share and advance postsecondary competency-based education practices, announced that its institutional membership had expanded from 18 to 33 (Competency-Based Education Network, 2015).

In March 2015, the researcher reconciled his own September 2014 research on active postsecondary competency-based education providers with the identified Eduventures and C-BEN institutions. Substantial overlap existed, yet each list included institutions not identified by the others. Taken together, the researcher determined that the number of accredited American postsecondary institutions offering *active* competency-based education programs as of March 2015 appeared to be 65.

The researcher then conducted a cursory review of each institution's web site in order to confirm eligibility for this study and to develop a general awareness of each effort. From this review, the researcher identified active programs as offered by private non-profit institutions, public institutions, private for-profit institutions, and through unique institutional arrangements. The researcher further determined that while 65 institutions ostensibly offered active competency-based education programs in March 2015, many did so by employing credit aggregation, prior learning assessment, and outcomes-based strategies that complemented traditional instructional or service strategies and methods.

The researcher elected to narrow his focus of interest to the 32 institutions that appeared to offer programs that could be completed entirely using competency-based education methods.

Of these, 11 community colleges were members of a grant-funded consortium led by the researcher's long-time employer, Western Governors University (WGU). Because these 11 institutions had deployed a version of competency-based education that essentially matched WGU's methods, albeit on a much smaller scale, and because the researcher intended to include WGU in his institutional sample, the researcher further narrowed his focus to the 21 remaining institutions.

From that group of 21, a sample of eight institutions was selected for further study by the researcher. Institutions selected were those that offered programs which could be completed entirely using competency-based methods and that seemed in the researcher's judgment to be mature in both their design and delivery. The extent of artifacts expected to be available was an important factor when selecting the sample. The researcher also sought to examine an institutional sample that would represent the industry's private non-profit, public, and for-profit sectors.

Once the study's population had been identified, artifacts that contained information on eligible programs were purposefully selected (Creswell, 2014). Creswell (2014) defined purposeful selection as an approach that ensures the researcher will rely upon people or artifacts that are optimal relative to both the phenomena observed and the study's research questions. Artifacts were identified, collected, and organized through the use of a purposeful, two step discovery process.

First, the researcher accessed and thoroughly reviewed the official marketing materials and institutional web sites that describe and support each eligible program. These artifacts tended to include program descriptions; discussion of the student, faculty, and learning experience; admission-, cost-, or timing-related information; institutional reports and public relations data;

and other logistical or program efficacy information. Second, the researcher searched press release distribution services, news aggregator web sites, and government agency information for evidence of official announcements, foundation or grant information, media accounts, and program-authored reports, blogs, opinion-editorial pieces, or presentations that contain information on eligible competency-based programs.

While the data and artifact collection process described previously occurred at the study's outset, information presented within study artifacts informed guided, and modified the document collection and discovery process as it evolved. This iterative process was employed until a state of saturation has occurred. Creswell (2014) described saturation as the point at which "gathering fresh data no longer sparks new insights or reveals new properties" (p. 189) that would inform the development of study themes.

The researcher carefully examined and worked with study data during two distinct data collection periods. A comprehensive initial collection and review of artifacts occurred April 2015 through June 2015. A second review of initial data and study artifacts was conducted October 2015 through January 2016. Concurrently, the researcher examined prominent, newly published competency-based education reports and guidelines. Through this data collection and analysis process, and informed by his own professional experience engaged in the design and delivery of competency-based education, the researcher identified characteristics, practices, and themes.

Content Analysis Process and Procedures

Berelson (as cited in Bryman & Bell, 2011) defined content analysis as "a research technique for the objective, systemic and quantitative description of the manifest content of communication" (p. 290). Holsti (as cited in Bryman & Bell, 2011) defined content analysis

similarly as “any technique for making inferences by objectively and systematically identifying specified characteristics of messages” (p. 290). Bryman and Bell (2011) observed that both definitions emphasized objectivity and a systematic approach. Building on Berelson and Holsti, Bryman and Bell suggested that researchers are able to establish their objectivity when they specify categorization, coding, and other rules for handling study materials in advance. By applying such rules consistently, researchers demonstrate the systematic nature of their work and ensure that their “personal biases intrude as little as possible in the process” (p. 290).

Bryman and Bell (2011) specifically emphasized documents and texts to define content analysis as a process that allows one “to quantify content in terms of predetermined categories and in systematic and replicable manner” (p. 291). Because they align closely with the circumstances and research methodology proposed here, Bryman and Bell’s definition of content analysis and their thoughts on transparency, objectivity, and a systematic method will guide the current researcher’s efforts.

Analysis Instruments & Software

The researcher examined, organized, coded, and interpreted study artifacts with the assistance of a priori evaluation instruments and qualitative data-analysis software. The employed evaluation instruments are described extensively subsequently and are included within the proposal’s appendix. The researcher used a market leading qualitative data analysis software program to support reliability of the coding and interpretation of data. The program’s coding, retrieval, and reporting tools helped the researcher to work efficiently, ensure consistency, minimize the potential for error, and support study validity during the collection and analysis stage of the research.

To ensure that artifacts are identified, examined, and interpreted in a comprehensive, consistent manner, the researcher developed and used an a priori coding scheme. Three distinct instruments were developed in alignment with the study's central and guiding research questions. Each employed relevant constructs derived from the literature on the study's key conceptual frameworks. To support the validity of the instruments, the researcher shared draft versions with professional colleagues who were asked to provide feedback on the relevance and comprehensiveness of the instruments and their constructs. Template versions of the three frameworks are included within the appendix of this study.

The a priori evaluation instruments consisted of three distinct frameworks:

- A Program Demographics Framework.
- An Essence of the Experience Framework.
- A Disruption Potential Framework.

The program demographics framework was used to identify and gather statistical information about each eligible program. The framework served as a study eligibility checklist and assisted the researcher in gathering facts and descriptive statistics for all programs (e.g., number of enrolled students, accrediting agency, etc.). This framework was also used to record program outcomes and the specific criteria used to report and evaluate program success, where available.

The essence of the experience framework was used to identify and gather information that describe each program's specific methods or practices, as well as its overall approach. The framework guided the researcher to code, consider, and interpret variable information, e.g., description of delivery methods or policies related to the time, place or manner of learning. This

framework helped the researcher to identify and record the essence of each program's unique student, faculty, and institutional experience.

The disruption potential framework guided the researcher to gather and interpret program characteristics using key constructs from Christensen's (1997) theory of disruptive innovation. Specifically, this framework helped the researcher to code, consider, and interpret artifact information from the perspective of Christensen's descriptions of low-end and new market disruption, sustaining and disruptive innovations, scalability and replicability, value networks, and commercialization. This framework assisted the researcher as he determined the extent to which each program has potential to serve as a higher education market disruption.

Textual Analysis Process for Data Interpretation

The researcher conducted artifact analysis and data interpretation in a continuous manner. Artifacts were carefully examined and then coded for the purpose of "segmenting and taking apart the data" (Creswell, 2014, p. 195). Coding assisted the researcher in a process of interpretation and inductive reasoning. Data and findings were winnowed as the study progressed (Creswell, 2014) in order to consolidate data within the study's key themes.

Study artifacts were organized and prepared for analysis. Specifically, the researcher identified eligible artifacts, assigned each a unique identification code that aligned with a particular competency-based education program, and examined each artifact carefully for understanding. Next, the researcher reflected upon the overall meaning and general ideas expressed within each artifact. The researcher wrote general, observational notes to preserve initial impressions and ideas. Such notes included the researcher's "impression of the overall depth, credibility, and use of the information" (Creswell, 2014, p. 197) and became study

artifacts used to interpret study themes. Notes were recorded electronically and managed within the qualitative software program.

Once artifacts were organized, examined, and understood in a general way, the researcher coded all artifact data, guided in this work by the a priori coding instruments. Creswell (2014) defined coding as a process of “segmenting sentences (or paragraphs) or images into categories, and labeling those categories with a term, often a term based in the actual language” (p. 198) of the artifact. Richards and Morse (2013) suggested that coding allows “the researcher to simplify and focus on some specific characteristics of the data” (p. 149) or in “abstracting or thinking up from the data” (p. 149). In its basic form, Richards and Morse said, coding involves labeling text or images. It extends beyond labeling to include a linkage with disaggregated data in both topical and analytical ways.

The researcher engaged in the constant comparison coding method as described by Glaser and Strauss (as cited in Bryman & Bell, 2011) in order to link data with concepts. Specifically, the researcher constantly compared phenomena within categories in a way that allowed for elaboration. Concept- and category-specific memos were generated and constantly compared by the researcher as he reflected upon the labels, linkages, and disaggregated data generated during the coding process. Through this process of constant comparison, thick, rich descriptions (Richards & Morse 2013) of the competency-based education practices described by artifacts were developed and collected within the researcher’s journal. The descriptions were treated as study data and were also be coded and analyzed for evidence helped to answer the study’s central and guiding research questions.

Through the iterative, comprehensive data collection, analysis, and constant comparison methods described here, a variety of descriptive themes emerged. The researcher examined these

themes in a careful, inductive way. This inductive reasoning allowed answers to the study's central and guiding research questions to be proposed and discussed. Study themes were analyzed and discussed both by program and in the aggregate. The researcher's observations are expressed in the context of the study's conceptual framework within the study's findings and discussion sections, chapters four and five respectively.

Human Subjects Considerations

Permission to conduct this study was sought and secured from Pepperdine University consistent with its institutional review requirements. The study's researcher was guided as he conducted this research by an experienced, qualified faculty chairperson in collaboration with a similarly qualified dissertation research committee.

Pepperdine University's Graduate and Professional Schools Institutional Review Board governs an application and approval process that exists to protect the welfare and dignity of human subjects while helping researchers to conduct ethical research (Institutional Review Board, 2014). The board adheres to the ethical principles of respect for persons, beneficence, and justice for the protection of human subjects research as expressed in the *Belmont Report* (U.S. Department of Health, Education, and Welfare, 1979). The board further ensures that research conducted at the university is in compliance with requirements set forth by the U.S. Department of Health and Human Services through its *Protection of Human Research Subjects* and *Standards for Privacy of Individually Identifiable Health Information* regulations.

The Department of Health and Human Services' *Protection of Human Subjects* regulations define a human subject as "a living individual about whom an investigator (whether professional or student) conducting research obtains (1) Data through intervention or interaction

with the individual, or (2) Identifiable private information” (U.S. Department of Health and Human Services, 2009, p. 3).

The present study did not involve human subjects and, as such, did not require a formal review from the university’s institutional review board. The researcher relied upon publically available, official artifacts. These artifacts described the practices employed by postsecondary institutions engaged in the delivery of competency-based education. They exist in the public domain. As such, protecting the confidentiality of the programs examined in this study is neither necessary, nor possible.

Study Validity

Expectations concerning study validity appropriately demand different thresholds and tactics within qualitative studies than with quantitative studies. Qualitative research is concerned primarily with establishing the authenticity of methods, interpretations, and findings within the context of a given research setting. Qualitative methods aim to describe and understand emerging phenomenon. Quantitative methods are focused on testing hypotheses and/or determining the extent of correlation or causation (Creswell, 2014).

The validity of qualitative studies relates to the accuracy of findings “from the standpoint of the researcher, the participant, or the readers of an account” (Creswell, 2014, p. 201). Richards and Morse (2013) suggested that valid qualitative studies are those “whose outcome will be appropriate and fully justifiable, as properly based in the data” (p. 95). Bryman and Bell (2011) distinguished between the internal and external validity of qualitative studies. The former, they suggested, exists when a researcher’s observations and theoretical ideas align. The latter, Bryman and Bell said, refers to the generalizability of a study’s findings.

Bryman and Bell (2011) relied heavily upon the work of Guba and Lincoln to further suggest that trustworthiness and authenticity are the true determinants of a qualitative study's validity. Trustworthiness, they said, is achieved when a study demonstrates credibility, transferability, dependability, and confirmability. Credible studies employ sound research practices to confirm their researchers' understanding and interpretation. Researchers help ensure the transferability and dependability of their studies by producing and sharing rich, detailed accounts of their observations at all phases of their research. Such practices allow readers to audit researchers' work and allow for what Bryman and Bell described as the confirmability of a study. Confirmability, they suggested, exists when "the researcher can be shown to have acted in good faith" (p. 398). Researchers achieve study authenticity by fairly describing study circumstances and viewpoints, enhancing readers' understanding of and appreciation for the subject of study, and by encouraging action.

To support the validity, trustworthiness, and authenticity of the proposed study, the researcher employed strategies that have been suggested by respected qualitative research methodologists to be sound. The researcher paid constant attention to what Richards and Morse (2013) described as "the fit of question, data, and method . . . to ensure that data are appropriate and appropriately handled and the question addressed fully and responsibly" (p. 95). The researcher also heeded Richards and Morse's advice to "log each significant decision and the interpretation of each discovery" (p. 95). The constant comparison coding method as described by Glaser and Strauss (as cited in Bryman & Bell, 2011) also supported the internal validity of this study.

The researcher used "rich, thick description" (Creswell, 2014, p. 202) to convey the essence of postsecondary competency-based education practices and took care to present

negative or discrepant information to ensure that study readers have all of the information necessary to form their own conclusions and ideas. The researcher consistently acknowledged potential bias and employed peer debriefing as a strategy to ensure reliable interpretation and promote study validity. Specifically, the researcher shared draft analysis findings and sought the substantive feedback of select peers. These peers were asked to challenge and clarify the researcher's assumptions and interpretations from the perspective those who have limited knowledge of competency-based education practices or disruptive innovation theory.

Plan for Reporting Findings

Observations of the data and aggregate themes are reported as findings within this manuscript's Chapter 4. The study's central and guiding research questions are addressed within Chapter 5. Here, the researcher's interpretation is offered within the context of Christensen's theory of disruptive innovation. Chapter 5 continues with a discussion of implications of this research and provides recommendations for both practice and further research.

Chapter 4. Results

The industry and economic realities described in Chapter 1 have prompted many colleges and universities to pursue innovation in order to sustain their business practices and/or enhance student success. Concurrently, a diverse and investment-driven marketplace of education technology products and services has matured, offering a variety of compelling value propositions (Straumsheim, 2015). Against this backdrop, competency-based education has emerged as a topic of substantial and rapidly growing interest among hundreds of American postsecondary institutions (Fain, 2014, 2015).

The findings presented here have been derived from an exploratory, qualitative review of publically available artifacts that describe the competency-based approach employed by eight American postsecondary institutions. This sample includes public, for-profit, and non-profit institutions that collectively offer 110 competency-based degree and certificate programs and serve more than 70,000 competency-based students.

To understand and describe the competency-based education practices of these eight institutions, the researcher interpreted and generated qualitative data through the collection and systematic content analysis of relevant, publically available artifacts. The researcher carefully examined and worked with study data during two distinct data collection periods. A comprehensive initial collection and review of artifacts occurred April 2015 through June 2015. A second review of initial data and study artifacts was conducted October 2015 through January 2016. The eight examined institutions are described immediately subsequently. Next, findings consistent with this study's central and guiding research questions are presented.

Private Non Profit Institutions

Western Governors University. The first accredited American postsecondary institution to award degrees based exclusively on a student's ability to achieve and demonstrate competency was Western Governors University (WGU). WGU works "to improve quality and expand access to postsecondary educational opportunities by providing a means for individuals to learn independent of time and place and to earn competency-based degrees and credentials that are credible to both academic institutions and employers" (Western Governors University [WGU], 2015a, para. 1).

Founded in 1997 by a coalition of 19 U.S. governors, WGU today offers 57 competency-based certificates and degree programs in the fields of business, education, information technology, and healthcare. It serves more than 64,000 active students and has helped more than 55,000 graduates to earn a competency-based credential. WGU's overarching strategic purpose is to demonstrate the efficiency and effectiveness of competency-based education. Its substantial portfolio consists entirely of competency-based offerings.

The College for America at Southern New Hampshire University. Southern New Hampshire University established its College for America (CFA) in 2012 to "radically expand and improve the quality of higher education through low-cost, competency-based degrees that are more applicable in the workplace" (College for America at Southern New Hampshire University [CFA], 2014, p. 5). CFA offers five undergraduate competency-based degree programs, enrolls more than 3,000 active students, and has helped more than 50 graduates to earn competency-based credentials since the college's inception (CFA, 2016).

Brandman University. Brandman University's mission is to "provide students with a dynamic education based on excellence and flexibility that creates lasting value and relevance

for evolving careers” (Brandman University, 2015b, para. 1). Brandman faculty and administrators spent more than two years designing and developing the university’s competency-based education strategy. Brandman launched an initial competency-based bachelor’s degree offering in Fall 2014 under its *MyPath* brand name. Today, Brandman offers four *MyPath* bachelor’s degree programs. Perhaps owing to its very recent launch, the researcher was unable to identify reliable *MyPath* enrollment or graduation data.

Public Institutions

University of Wisconsin Flexible Option. The University of Wisconsin features nine competency-based certificates and degree programs which are offered by separate institutions within the University of Wisconsin system and aggregated under the *Flexible Option* brand name. A cross-college team of faculty and administrators proposed the *Flexible Option* and began planning a common, competency-based associate’s degree in the Fall of 2012. An inaugural cohort of students enrolled in January 2015. Today, the university serves more than 500 active *Flexible Option* students, and has helped more than 12 graduates to earn a competency-based credential (University of Wisconsin Extension, 2015).

Northern Arizona University. Northern Arizona University (NAU) designed its competency-based, *Personalized Learning* program with financial support from the Lumina Foundation and in partnership with Pearson Learning Solutions. The program enrolled its first competency-based students in 2013 and today offers three competency-based bachelor’s degree programs. As of August 2015, the program had enrolled 635 students; 16 students had graduated (NAU Internal Audit Department, 2015). NAU projects to enroll more than 5,000 students by 2020 (NAU Annual Operational and Financial Review, 2015).

University of Michigan’s Master of Health Professions Education Program. A faculty group at the University of Michigan launched the university’s single competency-based program, a master’s of health professions education degree, in 2014. Eighteen participating students are guided by dedicated faculty mentors in the development of an individualized learning plan. This plan is designed to be flexible. It is consistent with each learner’s professional responsibilities and aggregates required assessments and learning resources in a manner that “promotes autonomy . . . and anticipates flexibility in the learning plan as new opportunities become available” (University of Michigan Medical School, 2015b, para. 1). Perhaps owing to its recent launch, the researcher was unable to identify reliable graduation data for this program.

Private For-Profit Institutions

Capella University. Capella University’s competency-based education programs operate under its *FlexPath* brand name. Capella offered its first FlexPath programs – an undergraduate and a graduate degree in business – in October 2013. It has since expanded its portfolio to include 34 competency-based *FlexPath* certificates and degree programs. As of March 2015, the university enrolled more than 1,000 active students in these programs and had helped more than 52 graduates to earn one of its *FlexPath* credentials (Grann, 2015). Capella’s competency-based education strategy has reportedly helped to accelerate the university’s overall growth. In May 2015, Cappella reported that enrollment in its traditional credit-hour based programs had increased since the launch of its *FlexPath* programs. It attributed this growth to the fact that its differentiated competency-based marketing messaging had attracted new types of consumers to the university (Capella Education Company, 2015).

Walden University. Walden University's competency-based offerings are branded as its *Tempo Learning* programs. The university currently offers two Tempo Learning programs, both of which launched in 2015. Three additional degrees and two additional certificate programs are in development (Competency-Based Education Network, 2016). Perhaps owing to its very recent launch, the researcher was unable to identify reliable *Tempo Learning* enrollment or graduation data.

Findings

Throughout this study's data collection and analysis process, and informed by his own professional experience engaged in the design and delivery of competency-based education, the researcher identified characteristics, practices, and themes. Specifically, the researcher observed two distinct methods for the delivery of competency-based education, as well as consistent mission, tuition, and student demographic realities among the examined institutions. Findings related to program design practices, the nature of assessment, the role of faculty, and provider-specific outcomes also emerged. Finally, findings that illustrate the disruptive potential of the practice were also observed.

Competency-based education methods. Sample institutions deliver competency-based education using one of two methods approved by the U.S. Department of Education as appropriate under federal financial aid law. The *direct assessment* method requires that institutions establish and assess competencies using direct measures (e.g., via examinations, projects, portfolios, etc.) and that they equate such competencies and measurements with minimum credit or clock hour standards for the purposes of awarding federal financial aid. The *credit-based* method of competency-based education requires institutions to bundle required

competencies and assessment measures within traditionally weighted course equivalences and to assign course-specific credit (Bergeron, 2013).

Five of the eight sample institutions – CFA, Capella, the University of Wisconsin, Walden University, and Brandman University – offer competency-based programs using the direct assessment method. This method allows students to navigate freely among a program’s discrete competencies and assessment activities. Direct assessment students are not necessarily constrained by how such competencies might aggregate, one with another, within course or domain categories and are free to approach required competencies in whatever manner is most appropriate given their personal preference or their institution’s requirements. In this way, the direct assessment approach disassociates student learning and progress from traditional postsecondary measures of time or credit hour accumulation.

Three of the eight sample institutions – WGU, Northern Arizona University, and the University of Michigan – offer programs and their required competencies in an aggregated, credit-based format. These institutions have elected to deploy required competencies and assessment instruments within course-specific bundles and to align credit hour equivalents with each. This arrangement prompts students to engage their in a course-by-course approach. Students are not necessarily free to move about required program competencies in a manner of their choosing, but they may accelerate within each course independent of time or content engagement requirements. This course-based method aligns with traditional information systems and federal financial aid realities in that, once aggregated, each collection of competencies is treated for the purpose of financial aid as the equivalent of traditional courses.

Mission and vision. The eight institutions examined here are guided by mission and/or vision statements that describe institutional commitments to postsecondary access, respect for

learners' career aspirations, and alignment with industry and workforce objectives. A commitment to innovation is also commonly described as core to institutional mission and vision among these institutions. The mission statement of Capella University is representative of what one would find among the sampled competency-based education providers. The Capella mission is to extend access:

for adults who seek to maximize their personal and professional potential. This mission is fulfilled through innovative programs that are responsive to the needs of adult learners and involve active, engaging, challenging, and relevant learning experiences. (Capella University, 2016b, para. 1)

The sample institutions also share a common understanding of, and commitment to, a fundamental competency-based education value proposition. Both the academic literature and this study's examined artifacts suggest that the promise of competency-based education lies in the ability of students to make progress in a self-directed, efficient manner, independent of time or content engagement constraints. By leveraging prior college or professional experience, competency-based learners are able to accelerate. Alternatively, where prior competencies are not present, the self-paced and supportive nature of programs offer learning materials and instructional support appropriate to help students develop and demonstrate new competencies on a pace that is appropriate to their unique needs and circumstances.

This fundamental value proposition is evident in the approach described by all of the examined institutions. It manifests within the University of Wisconsin *Flexible Option* programs, for example, in the following way. These programs are:

especially designed for self-motivated nontraditional students who want their previous schooling, work skills, and prior knowledge to apply toward degrees or certificates. The

competency-based and self-paced format of the UW Flexible Option fits the schedules of students who must balance work and family responsibilities with educational goals.

(University of Wisconsin, 2015a, para. 13)

Programs offered. The eight competency-based institutions examined here collectively offer 110 degree and certificate programs. All are offered as online programs to facilitate access. Three associate's degree programs in general studies with concentrations in business or healthcare are offered by two of the eight institutions. Fifty bachelor's degrees and 43 master's degrees are offered from within the following disciplines: business, communications, information technology, nursing, healthcare, education, psychology, and science. Fourteen certificate programs are offered. Their areas of focus include sales, business, communication, education, and business.

Capella University and WGU are the largest competency-based education providers. Together, they are responsible for 83% of the 110 programs offered by examined institutions. WGU offers the most programs with a portfolio of 57 offerings, 42% of which are bachelor's degree programs. Capella University offers 34 competency-based certificates and degree programs, 44% of which are bachelor's degree programs. Capella University's and Brandman University's programs are unique among all providers in that students may elect to move interchangeably from competency-based to credit-hour-based versions of the same program, as they progress. WGU's 21 teacher certification and one nursing pre-licensure programs are unique among all providers in that these programs require students to complete on-ground, clinical requirements (i.e., student teaching and nursing practicum experiences) that lead to initial teaching and nursing licensure, respectively.

Target students. All of the institutions examined here endeavor to serve a non-traditional, professional student audience. Each describe their target market to include working adults who have developed some competencies through prior professional or academic experience. The ideal Brandman University student, for example, is described as a “motivated learner who has prior work experience that could apply to certain subjects” (Brandman University, 2015a, para. 6). The student also “wants to dictate the pace” (Brandman University, 2015a, para. 6) of her learning and prefers “to work in a self-directed environment . . . with no set due dates” (Brandman University, 2015a, para. 6).

At 64,000 actively enrolled students, WGU’s student population is the largest of all competency-based institutions, and among largest student populations of any type in America. While not necessarily representative of the realities experienced elsewhere, WGU’s significant scale offers key insight on the realities, circumstances, and preferences of American competency-based education consumers. Sixty percent of WGU students are women. Seventy-two percent work full-time; 14% work part-time; 13% do not work (WGU, 2015b). The average WGU student is 37 years old; ages range from 17 to 77. Seventy-eight percent of WGU’s students are pursuing undergraduate education; 22% are enrolled in graduate-level programs. Geographically, WGU students reside within all 50 states, with proportional distribution that largely mirrors the nation’s population realities (WGU, 2014).

Program design. Regional accreditation requirements ostensibly ensure that program faculty make all decisions with respect to program and curriculum design. Each of the eight institutions examined here are regionally accredited. Capella University’s President described its *FlexPath* program design methods consistent with this accreditation expectation, suggesting that “faculty are responsible for defining the requisite competencies, developing the curricular

infrastructure to scaffold toward demonstration of these competencies, designing authentic assessments . . . and evaluating student demonstration of competency” (Kinney, 2014).

Program design methods vary by institution. Some, but not all providers describe program design broadly and generically as the responsibility of their faculty. Others suggested that established competency frameworks, third party subject matter experts, and/or licensing, accreditation, or certification requirements factored heavily in their program design methodologies. Such third party inputs presumably offer external validity and help institution-based faculty to determine program competencies and requirements.

WGU (2015c), for example, relies on the guidance of both program and assessment councils who join faculty to govern programs offered in each of its four colleges. These councils consist of nationally recognized, third party experts who work in collaboration with its faculty to identify and determine required program competencies and best practices for instruction and assessment.

At Walden University, a cross-functional team of faculty and administrators collaborate with employers to develop the *Tempo Learning* curriculum. Initial competencies and specific learning objectives are determined and designed by Walden University personnel and then reviewed by collaborating employers. Feedback from these employers is then incorporated in curriculum revisions and in the development of assessments. Walden University faculty preside over this process and offer final curriculum approval consistent with the university’s governance process (Competency-Based Education Network, 2016).

Brandman University leaders relied upon two established, third party competency frameworks – the Lumina Foundation’s Degree Qualifications Profile (DQP) and the Associate of American Colleges & Universities’ LEAP initiative – to establish its required program

competencies (Olson & Klein-Collins, 2015). CFA leaders also relied upon Lumina's DQP as well as "U.S. Department of Labor competency models" (CFA, 2014, p. 5) to determine its required program competencies.

Assessment. Assessments are fundamental to the competency-based education experience. Examined institutions design and deliver assessments in different ways, and they are each guided by different policies or thresholds when determining what types of assessment they will use or what specific demonstrations of competency must be. All allow for the successful demonstration of competency, via summative assessment, to satisfy program requirements. And all fundamentally honor the concept that student performance on assessments that measure competencies, and not the accumulation of time spent under the direction of faculty or engagement with class-based instruction or other tasks, is what determines and demonstrates the extent of each student's learning.

Assessments offered by examined institutions include objective exams (e.g., tests with items that may include true/false, matching, multiple choice, etc. response prompts) and performance-based exams (e.g., employer-informed projects, written work, worksheets, video-based presentations, team-based work, etc.). The former tend to be employed to measure low-level, conceptual or theoretical competencies. The latter appear to be used in all program areas, but especially with upper-division undergraduate and/or graduate-level competencies.

Providers vary in the degree to which faculty are involved with the delivery and evaluation of assessments. At WGU, CFA, and Capella, for example, examined artifacts suggest that coaching and instructional faculty work directly with students only to help them develop competencies. A different group of assessment-specific faculty at these institutions determine

students' competency and evaluate their assessment performance. The CFA catalog provides a description of the assessment approach employed by that institution and its faculty:

Students demonstrate mastery of the relevant competencies by completing goals, which are made up of projects. Projects are completed sequentially, to enable students to receive feedback and guidance from Reviewers before continuing to the next Project. (CFA, 2014, p. 12)

At the University of Michigan, assessments are described as Entrustable Professional Activities (EPAs). EPAs are designed to be completed within a learner's place of employment. Students select from a series of EPAs in collaboration with their assigned faculty mentors to develop their own personalized curriculum. Each EPA "has references that include a set of readings, examples, subject matter experts, guidelines, demonstrations, and other educational resources for the learner to use in completing" (para. 2) the assessment. Completed EPAs are evaluated by an assessment committee.

In all cases, when all of a program's required competencies have been demonstrated via the satisfactory completion of assessments, a student will earn his or her credential. The Capella University *FlexPath* catalog describes that institution's process:

The FlexPath option is designed to provide learners with the opportunity to earn a Capella degree by allowing them to demonstrate competencies in a direct assessment model of learning. Learners demonstrate mastery of all course competencies by completing authentic assessments at their own pace. The degree and its specialization are awarded upon completion of the FlexPath program requirements. (Capella University, 2016a, p. 116)

The role of faculty. The student-facing role and nature of faculty at examined institutions varies. In all cases, however, coaches and instructional faculty are assigned to support students as they access learning resources and study materials, engage formative and summative assessments, and ultimately demonstrate competency. Despite the tendency of providers to emphasize the accelerated and independent nature of competency-based education, students enrolled at examined institutions appear to be well supported.

The examined institutions have sought to disaggregate traditional faculty responsibilities, presumably in order to create efficiencies of scale and/or improve the student experience. At WGU, for example, the traditional faculty role has been disaggregated along the lines of its primary responsibilities and deployed across five functional departments: mentoring; subject matter instruction, curriculum design and development, assessment design and development, and assessment evaluation. Personnel within each department are assigned specialized roles and responsibilities specific to their department's functional mission. In this way, WGU's subject matter experts provide content instruction but do not evaluate their assigned students' assessment performance. That evaluation is conducted by assessment graders. Similarly, WGU faculty who design and develop curricula do not teach that curricula or evaluate assessment performance.

As a result of this preference for disaggregation and specialization, students enrolled at the institutions examined here are supported by, and interact with, a variety of personnel whose titles may include the following: faculty, student mentor, learning coach, academic success coach, course mentor, tutorial faculty, assessment grader, reviewer, and subject matter expert. At Brandman University, for example:

Tutorial faculty must meet with any student who does not demonstrate mastery . . . [to] develop a learning plan for the student to remedy student learning deficiencies. Following

the meeting with tutorial faculty, the student must meet with the academic coach in order to . . . confirm the project plan and timeline for the learning plan developed by the student and tutorial faculty and schedule the date for the next attempt on the final assessment.

(Brandman University, 2016, p. 59)

The University of Wisconsin *Flexible Option* approach leverages faculty employed within the broader university system to preside over the entire process:

Expert faculty from University of Wisconsin System institutions identify competencies—skills and abilities—that they consider necessary to earn a UW credential. You make progress by learning these competencies and passing assessments that demonstrate your knowledge. Along the way, you may draw upon existing knowledge to complete assessments at your own pace, whenever you are ready. As you prepare for assessments, you will learn and receive support from a variety of sources, including a dedicated mentor called an Academic Success Coach. To maintain rigorous academic standards, distinguished UW System faculty oversee all aspects of Flexible Option programs.

(University of Wisconsin, 2015a, para. 5)

Tuition models. All of the institutions examined here employ flat rate tuition models that are positioned as all-you-can-learn pricing for a fixed period of time. Providers market this flat rate approach as a pricing and affordability innovation that allows learners to accelerate their studies and meet program requirements by learning and demonstrating as many competencies as they are able to earn during a given, fixed term period. Length of terms offered range from three to six months. Tuition per term also varies by program.

The tuition model and marketing approach employed by University of Wisconsin *Flexible Option* is typical of the competency-based education providers examined here. Both affordability and the potential to accelerate are featured in its tuition description:

The UW Flexible Option offers working adults a more affordable way to earn a UW degree or certificate. Instead of paying by course or by credit, the Flexible Option lets you pay a flat rate for a subscription period of your choice. Because the UW Flexible Option format allows you to prove your mastery and pass assessments using existing skills and knowledge, you won't spend time or money sitting through courses you don't need. If you have significant work experience relevant to your degree and are highly motivated, you may find that you are able to pass assessments more quickly, and potentially accelerate your time to graduation. (University of Wisconsin, 2015b, para. 2)

CFA's \$1,250 per 6-month term tuition is the most affordable option. Most of the institutions examined offer tuition in the \$2,000 to \$3,000 range for continuous enrollment in a six month term. Capella University charges \$2,000 per three month quarter for undergraduate studies and \$2,200 per three month quarter for graduate studies. The University of Wisconsin *Flexible Option* allows learners to choose between an all-you-can-learn model and a fixed competencies model, with the latter being more 60% more affordable than the former. Interestingly, 60% of those enrolled in a Flexible Option program had elected the fixed competencies model as of May 2015. The University of Michigan's program is the most expensive of those examined, offering both in-state and out-of-state pricing. Its in-state competency-based learners pay approximately \$7,300 per term while its out-of-state learners pay just over \$8,000 per term.

CFA is also unique among examined institutions in that its students must have the formal support of their employers in order to enroll. This requirement ostensibly serves a variety of purposes. First, it allows CFA the opportunity to recruit and enroll students using a business to business sales strategy. Second, it helps CFA to be aware of and responsive to the specific workforce needs of their partner employers. And third, the requirement involves employers in the educational endeavors of their employees, helping the latter to access tuition assistance funds and providing an authentic environment within which to assess student learning.

Reported outcomes. Few of the examined institutions have published program or student performance data that could be used to determine the effectiveness of the competency-based education programs examined here. And independent assessments of performance beyond accreditor and U.S. Department of Education approval do not appear to exist for all but two of the institutions. Most, but not all, of the examined institutions have published enrollment information. Some, but again not all, have announced completion results via graduation announcements and press releases. Where available, institution-specific enrollment and graduation findings were reported at the beginning of this chapter.

WGU appears to have made a serious effort to measure and publish data regarding the effectiveness of its competency-based offerings and has shared the most performance outcomes information of any examined institution. The university publishes an annual report via its web site. The most recent WGU (2014) *Annual Report* features a variety of data that describe the performance of WGU's program offerings. Specifically, the report identifies enrollment, graduate, student demographic, and financial information. Findings from third party evaluations (e.g., WGU-specific results from the 2014 National Survey of Student Engagement and results from discipline-specific evaluations) are also described. WGU has attempted to understand

employer perceptions of its graduates' performance and has included results from a recent employer survey in its annual report. WGU has also elected to share its student retention, student progress, and student satisfaction data from 2008 forward.

CFA (2016) has published select results from a survey of its competency-based education students commissioned and conducted by the Bill & Melinda Gates Foundation in early 2015. This survey focused on CFA students' level of satisfaction with a variety of aspects of their CFA experience. One hundred seventy-two students responded to the survey. Findings revealed that 73% of respondents were women. The median age of respondents was 41 years old. Seventy-seven percent had some prior college experience. Ninety-eight percent of respondents reported to be employed. Ninety-nine percent of respondents would recommend CFA to a family member, friend, or co-worker; 97% rated the quality of interaction with their CFA coach as good or very good; and 95% felt that the reviewers who assessed their CFA work provided good or very good support.

Disruption potential. Fundamental to Christensen's theory of disruptive innovation is the distinction between disruptive and sustaining innovations. Established organizations, Christensen argued, are forced to invest in sustaining innovations in order to expand products and services consistent with the needs and interests of their most profitable customers. This quest to innovate at the high end of existing products and services can cause organizations to be blind to the opportunities that may exist within emerging markets or to miss signals from the low-end of their marketplace. Conversely, Christensen observed the emerging market potential of disruptive innovations: those that seek to address and meet the needs of consumers who are unserved (or underserved) by a market's established, mainstream organizations. Disruptive innovations, Christensen argued, tend to be scalable and replicable because they manifest as

products and services that are more accessible, affordable, efficient, and convenient than those offered by the mainstream.

This study's examined institutions have pursued a variety of disruptive innovations in an effort to attract consumers who are unserved (or underserved) by the postsecondary education industry. Each of the institutions examined here have employed strategies that appear specifically designed to attract and serve non- or underserved consumers. Examples of such disruptive strategies include:

- Personalized admissions support to guide and inform consumers through pre-enrollment requirements and to drive revenue-generating growth;
- Minimally selective admissions criteria, coupled with frequent start date opportunities to promote and expand enrollment access;
- Flat fee tuition models that are competitive with (and often more affordable than) mainstream tuition pricing;
- *All you can learn* tuition policies that incent acceleration by assessing the same tuition fee regardless of progress achieved; ostensibly resulting in lower total costs and time-to-degree completion;
- The ability to meet degree requirements in a self-directed manner, independent of time or place constraints and with the support of personalized coaching and instructional services.

Each of the examined institutions have reimagined and redeployed many of the sustaining innovations offered by the industry's mainstream institutions. The use of online delivery strategies and unbundled faculty and service models are two examples of the disruptive innovations employed. Each is described in turn subsequently.

The examined institutions' commitment to online delivery is evidence of their interest in flexibility, convenience, simplicity, scalability, and replicability; each of which are fundamental characteristics of disruptive innovations as described by Christensen. By providing access to degree attainment via online learning, the examined institutions have sought to directly compete on flexibility, accessibility, and convenience relative to the industry's dominant engagement strategy: classroom- and place-based instruction. Because online delivery is more affordable to deliver than place-based instruction, they've done so in a scalable and replicable manner. Place-based instruction is a costly sustaining innovation, long-pursued by mainstream providers to bring learners and faculty together in time and space. And while a significant number of mainstream learners value and prefer place-based instruction, the examined institutions have recognized that non-consumers, and/or those who exist within the low-end or on the fringe of the established marketplace may actually prefer the flexibility and convenience of online learning.

The examined institutions' use of learner-centric, unbundled faculty and service models also promotes scalability, replicability, and quality service. This introduces disruptive innovations that contrast with the industry's dominant instruction and service paradigm: one-to-many faculty-centric instruction and service strategies which are infrequently complemented by central institutional services. Each of the institutions examined here endeavor to personalize the competency-based learning experience by unbundling the traditional faculty role and assigning learner-specific support. Learners enrolled at the institutions examined here are supported by, and interact with, a variety of personnel whose titles may include the following: faculty, student mentor, learning coach, academic success coach, course mentor, tutorial faculty, assessment grader, reviewer, and subject matter expert.

In addition to the quality of service potential such unbundling strategies afford, this approach offers a way for institutions to better control their delivery costs by aligning personnel to specific, functional responsibilities consistent with their level of training, education, and experience. For example, early-career professionals may provide pacing and coaching support, while highly experienced, doctoral-prepared experts may offer specialized instruction. The former will command lower salaries than the latter and may be deployed across a wide population. This unbundling promotes economies of scale that may make it possible to affordably scale and replicate these competency-based methods as more learners enroll.

Through these strategies and practices, the institutions examined here have created new marketplace opportunities and delivery models that have attracted tens of thousands of consumers who had been unserved or underserved by, or who may simply prefer competency-based alternatives to, the industry's mainstream offerings. The institutions' target undergraduate consumer, for example, is an adult who has acquired some competencies and prior college experience, but has been unable to earn a degree. The nature of the experiences and models offered by each of the examined institutions provides such a learner the opportunity to credential her past experience and to earn an entire degree through the demonstration of competency via assessment. This path to degree completion simply does not exist among mainstream institutions. It is representative of the examined institutions' ability to provide products and services that have appealed to non-consumers and/or to those consumers who exist within the low-end of established marketplace.

Chapter Summary

This chapter has presented findings consistent with this study's central and guiding research questions. The study's sample of eight postsecondary institutions was described in an

institution-specific manner. Two distinct methods for the delivery of competency-based education were observed and described. Consistent mission, tuition, and student demographic realities among the examined institutions were observed and illustrated through the use of examples. Variable findings related to program design practices, the nature of assessment, the role of faculty, and provider-specific outcomes were also presented. Finally, findings that illustrate the disruptive potential of the practice were described and discussed.

A summary of this study's key components, conclusions, a discussion of implications, and recommendations for future research are presented in Chapter 5.

Chapter 5. Conclusions

The American public's interests are well-served by a strong, effective postsecondary education system. And yet the industry's predominant learning and service paradigm, one that credentials learning by measuring student's time on task and that treats all learners largely the same from a pacing and a requirements perspective (Mendenhall, 2013), is to some degree inconsistent with the realities, circumstances, and expectations of 21st century students. That paradigm "doesn't work for adults who are juggling jobs, family, and other priorities while they work toward a degree – an elaborate dance that too often ends in students leaving school with no degree, but lots of debt" (Greenstein, 2013, para. 2). The traditional paradigm may be failing many of the institutions that promulgate it as well. The vast majority of American colleges and universities – those that enroll students from regional markets and those that face significant competition – are under increasing pressure to create an affordable, effective college experience in order to compete and remain in business (Bogaty, 2013).

Innovative solutions must emerge from the public policy arena, from the business sector, and most importantly, from within the nation's postsecondary institutions themselves (Greenstein, 2013). Increased competition and an emphasis on innovative practices will advance the interests of both American consumers and the postsecondary institutions that serve them. Competency-based education, with its emphasis on the measurement of learning, not time, (Mendenhall, 2003, 2012) and its focus on operational efficiency and effectiveness, has the potential to evolve and shape the industry "by introducing simplicity, convenience, accessibility, and affordability where complication and high cost are the status quo" (Clayton Christensen Institute, 2014, para 2). In this way, the practice of competency-based education is considered by

many to be a disruptive innovation (Weise & Christensen, 2014) whose time has come (Fain, 2015; LeBlanc, 2014).

The purpose of this qualitative, exploratory study was to understand and describe the competency-based education practices of American higher education institutions within the context of Christensen's (1997) theory of disruptive innovation. In this, the study's final chapter, a review of the higher education landscape and the study's conceptual frameworks of competency-based education and disruptive innovation are presented. Next, a description of the study's methodology is offered, followed by a presentation of key findings. A brief discussion of increased scrutiny of competency-based education practices is then introduced. The study's conclusions and a discussion of limitations and areas for further study concludes both the chapter and the study.

The Higher Education Landscape

The prosperity of America and its people are inextricably linked to the level of education, competency, and preparedness of the nation's workforce (Obama, 2009). Educational attainment, creativity, and social skills will determine most Americans' ability to command viable, meaningful employment as technological innovation changes the nature and economics of work (Frey & Osborne, 2013). It is not an exaggeration to assert that the pre-requisite to a 21st century citizen's economic opportunity is an earned, high quality college degree (Carnevale et al., 2010; Obama, 2009).

And yet the nation's postsecondary student outcomes data suggest substantial room for improvement. The United States ranks sixth in postsecondary attainment among the world's working age people. In 2012, 39.4% of Americans ages 25 to 64 had earned an associate's degree or higher-level credential. When disaggregated to examine postsecondary credentials

among more discrete age bands, degree attainment data reveal that the United States ranks eleventh at 40.9% of those ages 25 to 34 having earned an associate's degree or higher-level credential (Lumina Foundation, 2014c).

Lack of access to postsecondary education is not the issue. The U.S. Census Bureau (2013) has reported that approximately 35 million Americans ages 25 years old and older have some college experience but no earned college credential to show for their efforts. The National Student Clearinghouse Research Center (Shapiro et al., 2014) reported that, during the past 20 years, more than 31 million Americans enrolled and then left college before earning a degree or a certificate. According to Harvard University's Graduate School of Education, those who *are* able to earn a postsecondary credential are taking longer to do so. Just 56% of postsecondary students are able to earn a bachelor's degree within six years of their initial enrollment. Among community college students, less than 29% are able to earn an associate's degree within three years (Symonds et al., 2011).

Still, a college degree is part and parcel of American culture. Total postsecondary enrollment at degree-granting institutions is expected to exceed 22 million students during 2016 (National Center for Education Statistics, 2014c). More women than men are presently enrolled with 45% of women ages 18 to 24 enrolled in postsecondary degree programs compared to just 39% of men from the same age group. Hispanic students ages 18 to 24 accounted for 16.5% of all postsecondary enrollment in 2011. And enrollment among all Hispanic students is projected to increase 27% through 2019. Overall postsecondary enrollment is projected to increase 5% among 18 to 24 year olds, 16% among 25 to 34 year olds, and 17% among students 35 years old and older through 2020. (The Lawlor Group, 2013).

As more American education consumers pursue postsecondary opportunities than ever before, they face a variety of challenging circumstances. Average tuition among the nation's colleges and universities has been and remains on the rise. Expressed as a percentage of Americans' median annual earnings, postsecondary tuition increased 14.5% from 2001 to 2010. Compounding this pressure, Americans' median annual earnings decreased \$12, 662 per year, or 18.5% during the same years (Denneen & Dretler, 2014). Americans' total student loan debt has grown in recent years and now exceeds one trillion dollars (Bogaty, 2013). As American consumers sought to finance the cost of their postsecondary education, student loan debt tripled in just 8 years, between 2004 and 2012, driven by a 70% increase in the number of borrowers and a 70% increase in the average, per person loan debt balance (Lee, 2013).

A variety of external forces have prompted the competitive landscape and traditional practices of American higher education to shift in recent years (Christensen & Eyring, 2011). For-profit and career college market entrants have emerged (Blaustain et al., 1998; U.S. Department of Education, 2011) and have enrolled hundreds of thousands of Americans (U.S. Department of Education, 2011; U.S. Senate Committee on Health, Education, Labor, and Pensions, 2012). Programs and courses offered at night, on weekends, online, and in blended delivery formats have provided students with a variety of access and service options from which to choose. At the same time, diverse student demographics and circumstances (The Lawlor Group, 2013; U.S. Department of Education, 2011), tuition and student loan debt pressure (Bogaty, 2013; Lee, 2013) and political realities (Mortenson, 2013) have evolved in ways that have changed the economics of the industry (Denneen & Dretler, 2014; Lapovsky, 2013). The competition for student enrollment and the revenue it generates among colleges and universities

is significant (Bogaty, 2013). These circumstances have created pressure on many postsecondary institutions to either evolve or perish (Denneen & Dretler, 2014; Lapovsky, 2013).

These issues have commanded attention from the highest levels of American government. During his first term in office, President Barack Obama (2009) established and announced a degree attainment goal that 60% of American 25-to-64 year olds would possess a college degree by the year 2020. If achieved, this result would allow America to once again claim the highest proportion of college graduates in the world. The most recent U.S. Census Bureau projections, however, suggest that just 46.4% of Americans will have achieved an associate's degree, or higher, by the year 2020 (Lumina Foundation, 2012). The gap between this projection and President Obama's ambitious goal is additional 24 million earned degrees.

These circumstances have prompted many colleges and universities to pursue innovations that have the potential to sustain their business practices and enhance student success. Concurrently, a diverse marketplace of education technology products and services has matured, offering a variety of options and compelling value propositions (Straumsheim, 2015). Against this backdrop, competency-based education has emerged as a topic of substantial and rapidly growing interest among American postsecondary institutions (Fain, 2014, 2015).

Competency-Based Education

Competency-based education “is an outcomes-based approach to education where the emphasis is on . . . what graduates know and can do” (Soares, 2012, p. 2). Competency-based methods ensure quality and assess learning through the objective measurement of learners' mastery of prescribed competencies and the ability to apply required knowledge, skills, and abilities (Center for American Progress, 2012a). Assessment methods are typically deployed independent of a student's time on task or source of competency development. As such,

competency-based education practices have the potential to accelerate time to degree completion, increasing both learner and institution effectiveness and reducing costs as compared to other methods (Center for American Progress, 2012a; LeBlanc, 2013; Mendenhall, 2003, 2012).

Competency-based education holds the learner central to a process that honors the worth and experiences of the individual and the integrity of all involved. In-depth study, whether guided by the expertise of faculty or offered independent of faculty experts through independent learning resources, can afford learners the opportunity to slow down, to fully invest, or to take more time with challenging or fascinating course material (LeBlanc, 2013; Mendenhall, 2003, 2012, 2013). Conversely, students who possess prior training or experience with particular competencies may elect to move efficiently through requirements (Voorhees, 2001). The use of rigorous, high stakes assessments ensures that learning has actually occurred and can be both measured and reported (Klein-Collins, 2012; Mendenhall, 2003, 2012; Voorhees, 2001).

In September 2014, 39 accredited colleges and universities offered *active* competency-based education programs. Few of these were operating at what could be described as scale. Interest among and within postsecondary institutions in the practice of competency-based education was substantial, however. In July 2014, a leading industry news source reported that more than 350 colleges and universities were planning to deliver competency-based education programs (Fain, 2014). That interest accelerated during the coming months. By September 2015, organizers of a competency-based education conference asserted that more than 600 American postsecondary institutions were working to offer competency-based education programs (Fain, 2015).

The success and scale of early competency-based institutions (Klein-Collins, 2012; Mendenhall, 2003), the financial support of leading foundations and non-profit advocacy groups

(Bill & Melinda Gates Foundation, 2015; Public Agenda, 2015), the emergence and profit motive of private consulting companies (Helix Education, 2015; Pearson USA, 2015), the sustained and substantial venture capital investment in education technology products and services companies (Straumsheim, 2015), and other factors have all helped to fuel interest in postsecondary education innovation from a diverse spectrum of actors and stakeholders. Taken together with clear signals from both the U.S. Department of Education (2014c) and the nation's six regional accrediting agencies (Council of Regional Accrediting Commissions Press Release, 2015) that competency-based education is an innovation that would be welcomed from a regulatory, compliance, and federal financial aid standpoint, it is not a surprise that competency-based education has emerged in a substantial way during the first years of the 21st century.

Disruptive Innovation

Definitions of innovation are as diverse as the studies that have produced them. Schumpeter distinguished invention from innovation. An invention, he suggested, centered on ideas whereas an innovation was accomplished only when those ideas had been commercialized via a transaction (Godin, 2012). Freeman (1974) defined innovation as the diffusion of new, improved products and services within an economy and suggested that innovation is both “an essential condition of economic progress and a critical element in the competitive struggle of enterprises and of nation states” (Freeman & Soete, 1997, p. 2). Abernathy and Clark distinguished an innovation from the status quo it was designed to replace and defined innovation as “the initial market introduction of a new product or process whose design departs radically from the past practice” (Proven Models – Abernathy & Clark, 2014, para. 3). Rogers (2003) defined innovation as “an idea, practice, or object perceived as new by an individual or other unit of adoption” (p. 12).

Christensen's (1997) theory of disruptive innovation provides this study's theoretical framework. Disruptive innovation is "a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors" (Christensen, 2014, para. 1). The theory posits that certain disruptive innovations have the potential to transform entire industries "by introducing simplicity, convenience, accessibility, and affordability where complication and high cost are the status quo" (Clayton Christensen Institute, 2014, para 2).

When an organization's resources, processes, and values align with its appropriate interest in creating sustaining innovations to meet the needs of its most profitable customers, the organization may be blind to, or simply disinterested in, opportunities that exist within low-end or emerging markets (Christensen, 1997; Christensen & Raynor, 2003). After all, the purpose of a sustaining innovation is to create better products and services than will ultimately sell for more money than their predecessors and satisfy important customers. There is very little incentive for most organizations to focus on low-end or emerging markets when growth and profits within mainstream markets are strong (Christensen, 1997).

Over time, however, the demands and realities of a given marketplace will shift. This happens as technological innovation outpaces customers' ability to absorb advancements (Christensen, 1997). This reality means that customers themselves may be blind to innovations they do not yet know they need. Christensen observed that organizations that consistently prioritize sustaining innovations at the expense of low-end or emerging market opportunities may overshoot the demands and realities of their existing market, providing product features and benefits that customers don't necessarily need or want. When this happens, Christensen suggested, a market may be ripe for disruption (Christensen, 1997; Christensen & Raynor, 2003).

Disruptive innovations are those that seek to change a competitive landscape by introducing affordable, simple, flexible, and/or more convenient products and services (Christensen, 1997). Christensen (1997) described the consistent characteristics of disruptive innovation as two fold. First, disruptive innovations have, by definition, no value in mainstream markets. Their defining attributes do not appeal to mainstream, high-end customers. However, their attributes, Christensen suggested, “become their strongest selling points in emerging markets” (p. 190). Second, disruptive innovations “tend to be simpler, cheaper, and more reliable and convenient than established products” (p. 190). As markets with multiple providers mature, consumers tend to make choices based on how convenient products and services are to acquire. When competition on convenience does not yield a clear market leader, consumers choose based on convenience and price. Disruptive innovations, according to Christensen, tend to have competitive advantages on both fronts.

Study Methods

An exploratory, qualitative review of publically available artifacts that describe the competency-based approaches employed by eight American postsecondary institutions provided the primary data for this study. Collectively, this sample of institutions offer 110 competency-based degree and certificate programs and serve more than 70,000 competency-based students. Prominent industry reports on competency-based education published from September 2014 through January 2016 were also examined and are described subsequently. The researcher’s professional responsibilities and observations while engaged in the design and delivery of competency-based programming also informed this study.

Taken together, these three categories of data: publically available artifacts from a sample of eight competency-based institutions; prominent reports and guidelines published during the

past 16 months; and the researcher's personal experiences and observations – have been collected, compared, and interpreted to present findings and conclusions consistent with this study's research questions at an important time in the evolution of postsecondary competency-based education practices. Given the rapidly changing nature of the practice, it is important to note that findings and conclusions presented here are current and consistent with postsecondary competency-based education practices as of January 2016.

Key Findings

The study's data revealed a variety of characteristics, practices, and themes. Specifically, the researcher observed two distinct methods for the delivery of competency-based education, as well as consistent mission, tuition, and student demographic realities among examined institutions. Variable findings related to program design practices, the nature of assessment, the role of faculty, and provider-specific outcomes emerged. The researcher also observed that regulatory guidance and scrutiny of competency-based education practices increased during the time of this study.

These institutions examined as part of this study are all guided by a commitment to postsecondary access, respect for learners' career aspirations, and alignment with industry and workforce objectives. All assert that successful competency-based learners are self-motivated people who are comfortable with technology-based instruction. And all describe their target market to include working adults who have developed some competencies through prior professional or academic experience. Program offerings are priced affordably in order to appeal to this target demographic. Flat rate tuition models that reward acceleration by allowing consumers to pay a single rate regardless of how many competencies or courses completed during the tuition term are employed by each of the examined institutions.

Assessments are fundamental to the competency-based education experience at each institution. Examined institutions design and deliver their assessments in different ways and are guided by different policies or thresholds when determining what types of assessments they will use or what specific demonstrations of competency must be. All allow for the successful demonstration of competency, via summative assessment, to satisfy program requirements, however. And all fundamentally honor the concept that student performance on assessments that measure competencies – and not the accumulation of time spent under the direction of faculty or engagement with class-based instruction or other tasks – is what should determine and demonstrate the extent of a student’s learning and mastery.

The examined providers have all sought to disaggregate traditional faculty responsibilities to varying degrees, presumably in order to create efficiencies of scale and/or improve the student experience. At all of the examined institutions, the faculty role has been disaggregated along the lines of its primary responsibilities and deployed across functional units: mentoring and coaching, subject matter instruction, curriculum design and development, assessment design and development, and assessment evaluation. As a result of this preference for disaggregation and specialization, students enrolled at examined institutions are supported by, and interact with, a variety of personnel.

Increased Scrutiny

Recent and substantial interest in competency-based education has led to the publication of a variety of studies which have offered critique of and guidance for those engaged in the delivery of postsecondary competency-based education. The U.S. Department of Education’s Office of Inspector General has issued two reports that include comments critical of the practice. The first (U.S. Department of Education Office of Inspector General, 2014) challenged the

process employed by the Department in its evaluation and approval of direct-assessment programs and suggested that “the Department could better manage the risks that direct assessment programs post to the Title IV programs” (p. 18). The second (U.S. Department of Education Office of Inspector General, 2015) challenged the process employed by a regional accreditor along similar lines.

During the first half of 2015, the Center on Higher Education Reform at the American Enterprise Institute published a series of five reports that examined aspects of competency-based education. The papers provided a comprehensive and detailed perspective on the state of competency-based education at a time of significant and widespread interest in the topic. Their focus was on matters beyond the scope and methodology of the present study. And as such, the series provides a compelling complement to findings presented in this study’s Chapter 4.

The series identified competency-based education providers and explored matters of affordability (Kelchen, 2015), investigated assessment best practice (Larsen McClarty & Gaertner, 2015), described employer perspectives (Franklin & Lytle, 2015), examined the regulatory environment (Lacey & Murray 2015), and summarized the competency-based student experience (Baker, 2015). The series is notable within the competency-based education literature for its diversity of focus, its specificity, and its use of institution-specific data.

Kelchen (2015) identified 52 American postsecondary institutions in early 2014 that either offered or planned to offer competency-based education programs. On the matter of affordability, Kelchen demonstrated that competency-based pricing structures do “tend to be less expensive than traditional programs” (p. 17) but cautioned that federal financial aid eligibility varied by provider and that “many of the most innovative programs” (p. ii) had yet to secure

approval to offer federal aid, a reality that would disproportionately affect those most in need of aid.

The latter was true at the time of Kelchen's study. However, the U.S. Department of Education (2014a) subsequently used its authority to create experimental financial aid sites to create a competency-based education demonstration program. That program, announced in the Summer of 2014 and launched during the Summer of 2015 currently allows more than 40 previously unapproved providers to now experiment with the use of federal financial aid, effective Fall 2015.

Larsen McClarty and Gaertner (2015) argued that the practice of competency-based education's credibility "depends on the quality of the assessments . . . programs use to decide who earns a credential" (p. ii). They offered a primer on industry best practices for valid assessment design and delivery and examined the use of assessments among competency-based education providers. Larsen McClarty and Gaertner examined competency-based programs and found that:

Many programs have clear documentation of the competencies they seek to teach and measure and the types of assessment they will use to determine mastery. Their next step should be to provide more specific documentation linking assessment tasks (such as test questions) with the competencies those tasks are designed to measure . . . [and] to begin longitudinal research linking their assessments to other relevant student outcomes, such as job performance. This type of evidence is crucial for establishing the validity of both CBE assessments and the cut scores that separate those who receive credit from those who do not. (p. 13)

Franklin and Lytle (2015) surveyed 479 hiring managers at employers based in 43 states to understand their perspectives on competency-based education. They found that, overall, employer awareness of competency-based education practices is low. Those survey respondents who were aware of competency-based education tended to hold a favorable view of the practice. But Franklin and Lytle found that hiring managers they surveyed lacked an understanding of how the practice might benefit their organizations. Of particular note, survey respondents “remain generally unable to articulate discrete needs as competencies; they rely instead on hiring generalizations grounded in the traditional idea of ‘fit’ that lack the specificity” (p. ii).

Franklin and Lytle (2015) argued that such lack of awareness among employers presented a unique opportunity for competency-based institutions to involve employers in the design and delivery of their programs. They observed “once familiar with the model, employers are highly enthusiastic about both the model itself and its potential for yielding prospective hires” (p. 3). But, the authors cautioned, providers should do more to help employers understand the overall competency-based value proposition in terms that go beyond the industry’s predominant “faster, cheaper, more flexible” (p. 8) marketing message. These themes are student-centric. They do not necessarily speak to the realities and priorities of employers, e.g., alignment with workforce needs, broad-based skills and abilities, etc.

Study Questions & Conclusions

This study sought to answer one central research question and four related sub-questions. The study’s central research question was: To what degree has competency-based education served as a disruptive innovation within American postsecondary education? Four associated sub-questions also guided the research. They were:

- How have American postsecondary education institutions deployed competency-based education practices?
- What characteristics of competency-based education practices deployed by American higher education institutions are common or distinct?
- What criteria have been used to evaluate competency-based education practices deployed by American higher education institutions?
- What outcomes have been achieved by American higher education institutions that have deployed competency-based education practices?

Findings provided answers to all of these questions leading to four study conclusions. Each is presented along with implications and recommendations for practice. Recommendations for further research are provided along with closing comments.

Conclusion one: Competency-based education is disruptive. This study primarily sought to determine the degree to which competency-based education has served as a disruptive innovation within American postsecondary education. Findings suggest that competency-based education is a disruptive innovation and that the practice has the potential to evolve and shape the postsecondary education industry. Specific aspects of the practice have been consistently employed in a manner that has allowed examined institutions to introduce “simplicity, convenience, accessibility, and affordability where complication and high cost are the status quo” (Clayton Christensen Institute, 2014, para 2). Additionally, the experiences and practices of those institutions examined here have created new marketplace opportunities by attracting tens of thousands of consumers who had been unserved or underserved by, or who simply prefer competency-based alternatives to, the industry’s mainstream offerings.

The overarching value proposition and the fundamental promise of competency-based education has appealed to these new education consumers and to those who had disengaged from, or were only loosely associated with, mainstream models. By leveraging their prior college or professional experience, competency-based students are able to accelerate their learning, a reality that offers both convenience and affordability as compared to mainstream alternatives. Where prior competencies are not present, examined institutions offer innovative ways to access learning materials and faculty or coaching support to help their students develop and demonstrate new competencies in a personalized and customized manner. These consumers have valued and seemingly prefer the ability to progress in a self-directed, efficient manner, independent of time or content engagement requirements typical of mainstream postsecondary education.

Christensen (1997) described the consistent characteristics of disruptive innovation as two fold. First, disruptive innovations have, by definition, no value in mainstream markets. Their defining attributes do not appeal to mainstream, high-end customers. However, their attributes, Christensen suggested, “become their strongest selling points in emerging markets” (p. 190). Second, disruptive innovations “tend to be simpler, cheaper, and more reliable and convenient than established products” (p. 190). When competition on convenience does not yield a clear market leader, Christensen suggested, consumers choose based on convenience and price. Disruptive innovations have competitive advantages on both fronts.

The current state of the practice aligns directly with what Christensen observed to be disruptive about innovations that compete against non-consumption to exploit low-end or emerging consumer markets. The competency-based programs examined here are distinct in that they are more affordable and flexible than traditional postsecondary offerings. Typical of

disruptive innovations, they are competing on price, and convenience while attracting tens of thousands to the approach.

The programs are further differentiated in the higher education landscape given their emphasis on workforce relevant competencies and support models that promise to coach and guide learners through program requirements. The target competency-based education consumer is, by definition, a consumer who has been perceived as having little to no value among mainstream providers. The target consumer typically has some college experience but no degree to show for it. The target consumer is not currently enrolled in a traditional program. The target consumer is an adult who has already engaged mainstream offerings with limited success and who is attracted to the promise that a competency-based approach may lead to a different outcome.

Implications of the practice's disruptive nature can already be seen in the fact that hundreds of postsecondary institutions are reportedly working to launch their own competency-based programs. This suggests that both consumers and postsecondary education leaders perceive value in the approach. As these new institutions deploy competency-based education practices, further study of the practice should occur to determine the nature of deployment and specific outcomes.

Conclusion two: Workforce aligned but minimally deployed. This study also sought to determine how American postsecondary education institutions had deployed competency-based education practices. The findings presented in chapter 4 thoroughly addressed this question. A variety of conclusions and implications can be suggested as a result. But this study's findings clearly suggest that the practice of competency-based education has been deployed in a minimal fashion among American postsecondary institutions. While hundreds of institutions are

developing competency-based education strategies, less than 100 institutions from an industry that includes 4,500 colleges and universities currently offer active programs. And both program offerings and the total number of enrolled student among those that do offer competency-based education programs remain relatively small.

The institutions examined in this study collectively offer 110 online degree and certificate programs. Areas of focus align with America's largest industries (e.g., education, healthcare, information technology, business) and appear to align well with, and have implications for the nation's workforce realities and needs. Fifty-four percent of all programs offered are post-baccalaureate certificate or master's degree programs, suggesting a commitment among examined providers to professional education and the aspirations of working adults who seek career advancement. And undergraduate offerings have implications for, and align with the substantial market of working adults who have some college but no degree.

The breadth and depth of competency-based subject matter may not be as diverse as the total number of programs offered suggests, however. This is because re-use of courses and assessments across programs is common. It is typical, in fact, that 50% or more of a particular provider's program is shared from a common base (e.g., a liberal arts and business base curricula), with variations creating specializations or areas of emphasis (e.g., in human resources, healthcare management, or supply chain management) that providers then elect to describe as unique program offerings.

Programs are also isolated and concentrated within a handful of providers. Capella University and WGU are, by far, the largest competency-based education program providers. Together, they are responsible for 83% of the 110 programs offered by the institutions offered examined here. The remaining 17% of programs are offered across six providers. WGU offers

the most competency-based education programs with a portfolio of 57 offerings, 42% of which are bachelor's degree programs. Capella University offers 34 competency-based certificates and degree programs, 44% of which are bachelor's degree programs.

In terms of student enrollment, impact is again isolated and concentrated within a handful of providers. WGU is the only examined provider operating at a significant scale. Its 64,000 active student population ranks among the largest postsecondary student populations of any type in America. This may be due, in part, to the fact that the university has actively enrolled and served competency-based students since 2001, while other examined institutions are relatively new market entrants. Only three of the institutions examined here – WGU, Capella University, and CFA – serve more than 1,000 competency-based education students.

Still, implications for the workforce are encouraging. Employers value and prefer postsecondary education when seeking to grow and develop their human resources. The fact that the nation's colleges and universities appear very eager to experiment with program design and development strategies that feature workforce competencies may bode well for the quality and readiness of the industry's future graduates. Further study should be conducted to examine program- and institution-specific competencies in the context of specific workforce needs or job projections. Future researchers and practitioners may also wish to explore the extent, nature, and impact of employer involvement in the design and delivery of postsecondary education.

Conclusion three: Characteristics are non-distinct. Characteristics of the competency-based education practices deployed by examined institutions appear to be common and are not necessarily distinct. In fact, examined artifacts, recent publications, and the researcher's personal experience suggest that this is largely an imitation movement within the postsecondary industry. WGU's influence is paramount and apparent across the practice. All of the examined

programs include at least some elements that directly mirror the approach employed by WGU. In fact, many (but not all) of the current competency-based education providers consulted with WGU administrators and faculty when initially designing their own programs. This consistency seems odd given the widespread emphasis among examined providers on innovation. And yet, the industry's heavy and complex regulatory climate (i.e., each provider must navigate a complex web of U.S. Department of Education requirements, accreditation standards, state authorization regulations, and institution-specific governance realities) may create a fundamental need for emerging providers to follow in the footsteps of others, at least initially.

Findings suggest that WGU's mentoring model appears more specific and personalized than the approaches employed by other examined providers. Capella University's and Brandman University's willingness to allow students to move freely among course-based and competency-based approaches and CFA's requirement that enrolled students have the formal support of their employers are also distinct. The direct-assessment approach itself is a distinct innovation that emerged as CFA, Capella, and others sought regulatory approval to offer their first competency-based education programs.

Other aspects of the student-facing competency-based experience appear to be largely the same across institutions – only the tuition amounts, job titles and descriptions, and qualifications of the people involved seem different. Further study of all three areas in the context of student outcomes is needed to determine how these differentiators benefit or otherwise impact their organizations and learners.

Findings were inconclusive on the consistency or particular attributes of program and assessment design methodologies. Program design methods varied or were not publically described, by provider. Some, but not all providers described program design broadly and

generically as the responsibility of their faculty. Others suggested that established competency frameworks, third party subject matter experts, and/or licensing, accreditation, or certification requirements factored heavily in their program design methodologies. Assessments offered by examined providers appear to include objective exams (e.g., traditional tests with items that may be true/false, matching, multiple choice, etc.) and performance-based exams (e.g., employer-informed projects, written work, worksheets, video-based presentations, team-based work, etc.). The former tend to be employed to measure low-level, conceptual or theoretical competencies. The latter appear to be used in all program areas, but especially with upper-division undergraduate and/or graduate-level competencies. Specific details on the design, development, and maintenance of such instruments were not discovered during the present study.

Conclusion four: Evaluation criteria and outcomes are unclear. This study sought to determine what criteria had been used to evaluate the competency-based education practices deployed by American higher education institutions and what outcomes had been achieved. While a variety of evaluation criteria were discovered, the efficacy of the practice remains unclear. Empirical studies of outcomes achieved by competency-based education providers are not evident in published literature. And this study's findings were inconclusive.

Few of the examined institutions have published program or student performance data that could be used to determine the effectiveness of the competency-based education programs examined here. And independent assessments of performance beyond accreditor and U.S. Department of Education approval do not appear to exist for all but two of the institutions. Most, but not all, of the examined institutions have published enrollment information. Some, but again not all, have announced graduates results. But only WGU and CFA appear to have attempted to

demonstrate the efficacy of their practices using performance metrics they've elected to share publically.

While they should be applauded for their serious attempts to demonstrate the efficacy of the practice and for the transparency with which they have shared institutional data, it should be noted that neither WGU, nor CFA have elected to share information on the number of students who have begun their programs but who have dropped out before earning a credential. Nor has either institution shared its graduation rates or certain performance data in a disaggregated (e.g., program-specific) manner. The data presented by both appear to be only those outcomes data that show a favorable view of the institution and its performance.

The U.S. Department of Education has published guidelines intended to help institutions understand competency-based education in the context of its federal financial aid requirements (Bergeron, 2013). The Department's internal Office of the Inspector General has issued separate reports (U.S. Department of Education Office of Inspector General, 2014, 2015) that have raised questions about the legitimacy of competency-based education in the context of Federal regulations that define and require substantive student and faculty engagement. And a consortium of the nation's regional accrediting agencies have issued and agreed to adhere to common accreditation standards and guidelines for competency-based education (Council of Regional Accrediting Commissions Press Release, 2015). These emerging factors and still evolving criteria will ultimately determine the standards and criteria by which competency-based education is evaluated during the coming years.

Limitations

The researcher acknowledges that the use of artifacts as proxy for the perspective of people is a potential limitation of this study. The researcher believes, however, that his reliance

on artifacts allowed for a type of richness in terms of both their depth and availability in support of this study that was both appropriate and unique. The researcher further acknowledges that his long-term WGU employment and his personal values may have introduced a confirmation bias within the work.

To support the validity, trustworthiness, and authenticity of the proposed study, the researcher employed strategies that have been suggested by respected qualitative research methodologists. The researcher paid constant attention to what Richards and Morse (2013) described as “the fit of question, data, and method . . . to ensure that data are appropriate and appropriately handled and the question addressed fully and responsibly” (p. 95). The researcher also employed the constant comparison coding method as described by Glaser and Strauss (as cited in Bryman & Bell, 2011) to support the internal validity of this study. The researcher also reflected on and documented the study’s progress and other circumstances within a research journal.

Recommendations for Further Research

The opportunities for future competency-based education research is both vast and significant. Fundamental questions about the efficiency, effectiveness, and evolution of the practice, the specific experiences of learners, faculty, and staff, and the efficacy of all of all of the aforementioned exist. Will the institutions currently planning to deploy new competency-based programs develop innovations that create more distinctiveness than currently exists? And if so, to what end? Will the tuition models deployed to date evolve to create less affordable options as institutions invest in what Christensen described as sustaining innovations in order to attract new learners and compete in a crowded competency-based education landscape? And if so, will consumers react negatively?

More transparency and additional research is needed in order to understand how program competencies and assessment realities are actually determined, developed, evaluated, and kept current. Further study on the specific roles of employers and faculty in this process should also occur. While beyond the scope of the present study, a phenomenological approach to include practitioners and faculty engaged in the program and assessment design process at leading competency-based institutions seems particularly appropriate. The right identification of the right competencies, measured the right way is key to the legitimacy of competency-based education. And yet this study's methodology failed to reveal sufficient information to offer conclusions or implications in these areas.

Closing Comments

The institutions examined and discussed here represent the vanguard of an important and fascinating evolution of postsecondary education. They have designed and deployed a new model for postsecondary learning that is attracting consumers who had otherwise been left marginalized or underserved by traditional practices. These institutions share a common understanding of, and commitment to, the fundamental competency-based education value proposition. They are working to fulfill the promise of competency-based education, a promise that ensure the ability of learners to make progress and develop in a self-directed, efficient manner, independent of time or content engagement constraints while leveraging experience as they seek to credential their knowledge, skills, and abilities.

Despite such lofty rhetoric and potential, the practice of competency-based education has been deployed in a minimal fashion among American postsecondary institutions. And as a result, to date, the practice has had only minimal impact within an industry that urgently needs innovative solutions. Learning and employment outcomes, while encouraging, remain unknown

to large degree. And questions related to the assessment validity and the nature of faculty engagement with competency-based learners have surfaced in a way that may influence next iterations of the practice. More work and additional research must occur on all fronts to advance and understand the practice.

The recent, increased, and unsettled scrutiny of the practice may serve to stall further innovation, even as hundreds of institutions are reportedly investing in their own competency-based education initiatives. The postsecondary education industry is heavily regulated in the form of institutional and programmatic accreditation guidelines, state licensing and compliance requirements, and federal financial aid policy. When ambiguity within this regulatory landscape exists, postsecondary decision-makers tend to revert to a lowest common denominator perspective on matters of innovation and change. This can serve to stifle creativity and perpetuate the status quo. With this reality in mind, the Department of Education, its Office of Inspector General, and if necessary, members of Congress should provide distance education policy and regulatory clarification in a manner that creates safe innovation opportunities for institutions that are interested in the practice of competency-based education.

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APPENDIX A

A Priori Coding Instruments

<u>Program Demographics Framework</u>	<u>Essence of the Experience Framework</u>	<u>Disruption Potential Framework</u>
Institution Name	Institution Name	Institution Name
CBE-Specific Brand Name	Mission	Degree of Sustaining Innovation(s)
CBE Programs Offered	Target Student	Degree of Disruptive Innovation(s)
CBE Type	Connectedness & Experience w/Students	Competing Against Non-Consumption?
Institution Type	Type of Learning Objects	CBE Scaleability
Marketed as CBE	Role of Assessments	CBE Replicability
Graduate CBE Program(s)	Type of Assessments	Commercialization Potential
Undergraduate CBE Program(s)	Role of Student's Employer	Business Model Potential
# Enrolled	Program Development Methods	New Market Potential
# Complete	Tuition Description	Low-End Market Potential
Discipline of Program(s) Offered	Tuition Cost	
Outcome Criteria	Annualized Tuition	
Reported Outcomes	Other Fees	
	Unique Characteristics	
	Infrastructure	

APPENDIX B

Non-Human Subjects Determination Notice

PEPPERDINE UNIVERSITY

Graduate & Professional Schools Institutional Review Board

October 27, 2014

Christopher Mallet

Protocol #: N1014D01

Project Title: A Study of Post-Secondary Competency-Based Education Practices in the Context of Disruption Innovation Theory

Dear Mr. Mallet,

Thank you for submitting the Non-Human Subjects Verification Form and supporting documents for your above referenced project. As required by the Code of Federal Regulations for the Protect for Human Subjects (Title 45 Part 46) any activity that is research and involves human subjects requires review by the Graduate and Professional Schools IRB (GPS-IRB).

After review of the Non-Human Subjects Verification Form and supporting documents, GPS IRB has determined that your proposed research activity does not involve human subjects. Human subject is defined as a living individual about whom an investigator (whether professional or student) conducting research obtains (1) data through intervention or interaction with the individual, or (2) identifiable private information. (45 CFR 46102(f))

As you are not obtaining either data through intervention or interaction with living individuals, or identifiable private information, then the research activity does not involve human subjects, therefore GPS IRB review and approval is not required of your above reference research.

We wish you success on your non-human subject research.

Sincerely,



Dr. Thema Bryant-Davis
Chair, Graduate and Professional Schools IRB
Pepperdine University

cc: Dr. Lee Kats, Vice Provost for Research and Strategic Initiatives
Mr. Brett Leech, Compliance Attorney
Dr. Kay Davis, Faculty Advisor

¹ *Research* means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. Activities which meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported un-der a program which is considered research for other purposes. (45 CFR 46.102(d)).