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COMPLEXITY LEADERSHIP THEORY IN EDUCATION REFORM: ILLUMINATING LEADERSHIP STRATEGY THROUGH VALUE-CREATION STORIES

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REVA BOND

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Reva Bond

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The examination committee certifies that the dissertation and the oral examination is approved

Supervisor:
Dr. Agnieszka Palalas
Athabasca University

Committee Members:
Dr. Pamela Walsh
Athabasca University

Dr. Veronica Thompson
Royal Roads University

External Examiner:
Dr. Amy Burns
University of Calgary

March 10, 2023

1 University Drive, Athabasca, AB, T9S 3A3 Canada
Toll-free (CAN/U.S.) 1.800.788.9041 (6821)
fgs@athabascau.ca | fgs.athabascau.ca | athabascau.ca

Dedication

This work is dedicated to my three daughters, Ashlynn, Kelsey and Hailey, with deep love and gratitude.

Life is a journey, not a destination. There are infinite possibilities on that journey. If you open yourself up, possibilities reveal themselves. However, one still has to be brave enough to continue travelling. Sometimes the journey gets very difficult, but that is how we continue learning and growing. That is how we appreciate the less difficult parts of the journey. That is how we are gifted moments of happiness, contentment, joy, and sometimes even awe. Thank you for letting me witness your journey. You are my awe. I promise to never hold you back and always lift you up.

And to my partner Steven, *an-diugh gu bràth, gu bràth an-diugh*.

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Abstract

Even educational leaders that advocate and support systemic change are limited by their own individual agency. Embracing this paradox, founded on complexity leadership theory (CLT), this doctoral dissertation used value-creation stories to illuminate the personalization inherent in leadership strategy, bringing voice to the experience of human agents, all to increase our understanding of enabling leadership for the purpose of supporting education reform. Rich descriptions of the six enabling leadership practices were generated from the participants who were actively living meaningful reform through the construction and implementation of a blended learning framework project at a Canadian polytechnic institution during COVID-19. Three types of memory, retained information that influenced future actions, were revealed: inside memory, outside memory, and absent memory. How each of these types of memories behave as either an inhibitor or a catalyst to information flows is demonstrated throughout this case study. How understanding behaves as a strange attractor was another significant finding. These case study findings should be used by practitioners from any educational setting to support successful education reform and to improve the effectiveness of their own enabling leadership practice.

Keywords: complexity leadership theory, interactions, leadership, polytechnic, value co-creation

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Glossary

Adaptability – requires novelty and innovation (Uhl-Bien & Arena, 2018)

Adaptation – when a selection process leads to an improvement by some determined measure of success (Axelrod & Cohen, 2000)

Adaptive space – is the fluid conditions that enable networked interactions to foster innovation and learning; is essential for organizations to be able to operate like a CAS (Uhl-Bien & Arena, 2018)

Agent – a person, technology, piece of information or resource (Uhl-Bien & Arena, 2018) that contains the properties of location, capabilities and memory (Axelrod & Cohen, 2000)

Agile complexity leader – an individual who is proficient in all three leadership functions required for adaptability: operational, entrepreneurial and enabling (Uhl-Bien & Arena, 2018)

Artifact – objects used by agents with features that may evoke certain agent behaviors but lacking purpose of their own (Axelrod & Cohen, 2000)

Attractor – pull people together to link up (Uhl-Bien & Arena, 2018)

Attribution of credit – is the process when an agent intervenes to increase the frequency of successful strategies or to decrease the frequency of unsuccessful strategies (Axelrod & Cohen, 2000)

Brokerage - provides opportunity for agents to link up (Uhl-Bien & Arena, 2018)

Complex systems – system with elements that when mixed together are not decomposable to its original elements (Uhl-Bien & Arena, 2018); system with strong interactions between its

elements evidenced in that events today influence probability of events tomorrow (Axelrod & Cohen, 2000). A complex system "comprises a collection of objects competing for a limited resource" (Johnson, 2009, p.11).

Complex adaptive system - is a dynamic, self-organizing system with no centralized control and no fixed order, that continually evolves with changing environmental conditions (Uhl-Bien & Arena, 2018) or more simply "when a system contains agents or populations that *seek* to adapt" (Axelrod & Cohen, 2000, p.7).

Complexity - rich interconnectivity. Complexity allows us to see how leadership emerges within a complex network of people, place and conditions (Uhl-Bien & Arena, 2018)

Complexity leadership - a process that enables people and organizations for adaptability (Uhl-Bien & Arena, 2018)

Complexity science – "is the study of the phenomena which emerge from a collection of interacting objects" (Johnson, 2009, p. 3) or the "science behind surprise" (p. 10).

Complicated systems – system made up of stable moving parts; even when mixed together, each element can still decompose to its original form (Axelrod & Cohen, 2000; Uhl-Bien & Arena, 2018)

Conflict - adaptive tension (Uhl-Bien & Arena, 2018)

Conflicting - competing view. Conflicting is the tension created when agents bring diverse needs, worldviews, preferences or values to interactions. It motivates an agent to elaborate or change and is fuel for creativity. It occurs when agents co-create in cohesive groups. It is one of two key dynamics that makes complex system adaptive (Uhl-Bien & Arena, 2018).

Deep ecology – earth-centered view that sees the world as a network of phenomena that are fundamentally interconnected and interdependent, recognizing the intrinsic value of all living beings, including humans, in the natural environment (Capra, 1996)

Dynamic – a force that stimulates change or progress within a system or process (Oxford Dictionary, n.d.)

Ecology – the branch of biology that deals with the relations of organisms to one another and to their physical surroundings (Oxford, n.d.)

Emergence - new adaptive order for a system = unexpected outcomes. Emergence is the creation of new order that happens when agents in a networked system combine together in an environment poised for change. It occurs when networked interactions allow events to link up. (Uhl-Bien & Arena, 2018)

Emergent phenomena – are radically novel phenomena, evolving from a dynamical construct into a coherent whole, which is ostensively recognized at the global level (Goldstein, 1999); emergent phenomena arise from a collection of self-organizing interacting objects (Johnson, 2009).

Emergent properties – features of a complex system that separate parts do not have (Axelrod & Cohen, 2000)

Enabling leadership – focuses on enabling the conditions that support adaptive spaces, operating within the interface between operational and entrepreneurial systems in an organization (Uhl-Bien & Arena, 2018)

Entrepreneurial leadership – focuses on the exploration of new ideas to further grow the organization (Uhl-Bien & Arena, 2018)

Entrepreneurial system – an informal system that pushes for change in the form of new opportunities, different operating procedures and new products or services; one of two primary systems that make up an organization (Uhl-Bien & Arena, 2018)

Group cohesion - is how connected an agent is with others in a group and requires high levels of trust. (Uhl-Bien & Arena, 2018)

Harnessing complexity – using the knowledge of complexity to be a more adaptive agent with the intention to do good in the world (Axelrod & Cohen, 2000)

Hierarchical organization – the reality of most organizations (Uhl-Bien & Arena, 2018)

Information flows – allow agents to link up; one of two conditions required to enable emergence (Uhl-Bien & Arena, 2018)

Innovation – is generated in the tension between entrepreneurial and operational pressures (Uhl-Bien & Arena, 2018)

Interaction - is reciprocal dialogue between two or more agents that occurs synchronously or asynchronously interfaced by technology (Juwah, 2006)

Interaction patterns – the structure within a population that determines how likely or unlikely types of agents are to interact with each other (Axelrod & Cohen, 2000)

Interconnectivity – interdependent and connected at multiple points (Goldstein et al., 2010)

Intervention – introducing a new design such as a policy change, new product or process improvement strategy (Axelrod & Cohen, 2000)

Leadership – is the product of interaction; it is a dynamic; it transcends the capabilities of any one individual; it can be observed in the "spaces between" people and ideas (Lichtenstein et al., 2006).

Linkages - are the connections that hold bonded agents together. (Uhl-Bien & Arena, 2018)

Link up or linking up - is the commonality agents find that allows them to bond in relationships and networks. It occurs when interdependent agents have enough commonality to combine ideas and efforts in ways that trigger novelty and amplify emergence. It is one of two key dynamics that make complex systems adaptive (Uhl-Bien & Arena, 2018).

Macro – a collection of dynamic networks of interactions (Uhl-Bien & Arena, 2018)

Networks – a collection of agents acting in parallel, creating rich interconnectivity (Uhl-Bien & Arena, 2018); represents a set of objects that are interacting, i.e. a network represents a complex network (Johnson, 2009, p. 10).

Operational leadership – focuses on the exploitation of ideas into successful products (Uhl-Bien & Arena, 2018)

Operational system – a formal system that pushes for order in the form of productivity, efficiency and results; one of two primary systems that make up an organization (Uhl-Bien & Arena, 2018)

Poised agent – an individual with ideas and desire to change (Uhl-Bien & Arena, 2018)

Population – can be a population of agents or a population of strategies; useful to see yourself and your actions in the context of the population (Axelrod & Cohen, 2000)

Pressures – act to loosen up a system for change; one of two conditions for enabling emergence (Uhl-Bien & Arena, 2018)

Relationships - enduring interactions among agents (Alfasi & Portugali, 2007)

Rich interconnectivity = complexity; complex network of agents that change each other irreversible through interaction. (Uhl-Bien & Arena, 2018)

Selection – a change in the agents or a change in the strategy (Axelrod & Cohen, 2000)

Shallow ecology – a human-centered view of the world which places humans above or outside of the natural environment (Capra, 1996)

Social ecology – the branch of ecology that asks questions about the cultural characteristics and patterns of social organization that have brought us to this present point in time (Capra, 1996)

Strange attractor – a curved geometric shape representing a complex pattern of behavior in a chaotic system (Capra, 1996)

Strategy – is the plan of action an agent takes in response to its environment and the achieve its goals (Axelrod & Cohen, 2000)

System – contains the elements of one or more population of agents, all the strategies the agents use as well as the relevant artefacts and environmental factors (Axelrod & Cohen, 2000)

Tag – is a symbol or a marker that acts as a catalyst for change by mobilizing coordination among agents; tags create attractors (Boal & Schultz, 2007; Uhl-Bien & Arena, 2018)

Tagging – is a mechanism that facilitates agents to distinguish among each other and often impacts the flow of resources (Boal & Schultz, 2007)

Type – is a category of agents or strategies that is used to describe and/or model the change in a population (Axelrod & Cohen, 2000)

Variation – is a key concept when analyzing how to intervene on a particular complex adaptive system and refers to an optimal balance of variety and uniformity (Axelrod & Cohen, 2000)

Chapter 1: Introduction

"To develop a complete mind: Study the science of art; study the art of science. Learn how to see. Realize that everything connects to everything else."

– Leonardo da Vinci –

Few anticipated that 2020 would be an epochal point in our human history. According to Groysberg and Abrahams (2020), the comfort of societal norms, a steady economy, and political predictability have detonated before our eyes due to a virus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which causes the coronavirus disease COVID-19 (World Health Organization, 2020). How can an object so miniscule motivate a global emergent phenomenon? Answers to this question lie in the exploration of complexity theory. This example also substantiates that leadership is more complex than ever before, with many signs pointing towards continued acceleration. This dissertation research was designed using Complexity Leadership Theory (CLT) as its foundational tenet in order to reveal new insights into leadership strategy. The aspiration is that you will choose to adapt and apply these learnings in your leadership practice to aid successful education reform within your unique contextual constraints.

As an agent afforded a leadership role, I am deeply interested in increasing knowledge and improving skills to manage effectively within the complex adaptive system, or CAS, of higher education. This dissertation research built a case study on a blended learning project at a polytechnic institution in Canada and looked at the interaction between two agents as the unit of analysis during the first six months of 2020, arguably an unprecedented time of transition in higher education. A prime example of education reform, this blended learning project consisted

of taking curriculum that had been delivered only face-to-face and adapting it to distance education practices utilizing online delivery methods. This dissertation research generated rich descriptions of enabling leadership and adaptive space which has provided new insights into how leadership strategy influences emergent phenomena.

This introductory chapter first makes the distinction between systems and processes. Next, an investigation of the definitions of complexity and complex systems used by others in the complexity science and research community is documented. Then an exploration of complex adaptive systems, taking a nested approach to unpacking the contextual layers as they pertain to this dissertation research, is presented. A brief overview of the Canadian construction workforce (macro), the role of polytechnic education (meso), and a specific value co-creation (VCC) event, namely the blended learning framework co-construction and implementation project (micro), are discussed before introducing the problem statement and purpose. The initial research question is established along with an introduction of value-creation stories as the chosen data generation method. The rationale and significance for choosing Complexity Leadership Theory (CLT) into the conceptual framework for this dissertation research will unravel throughout. This chapter ends with a brief summary of Chapter One and outlines the remaining dissertation chapters.

Processes, Systems, and Emergent Phenomena

The reported case study takes the position that learning is not the same as education. This false synonymy has created a barrier to successful education reform attempts in polytechnic education. The post-secondary education system was designed during the industrial age to scale-up workforce training and for stability maintenance (McClellan, 2010). Today, in the digital information age, we need a system that provides agile, flexible, personalized training on a continuous basis to keep pace with technological and economical market demands (Benson,

2018; Beaudoin, 2007; Brass & Lynch, 2020; Cabellon & Brown, 2017; Laurillard, 2012; Portugal, 2006). When research findings substantiate that a new technology or teaching method can improve learning, it is only adopted so long as it does not disrupt the education system that has been put in place (Ali et al., 2018; Penuel et al., 2011; Penuel et al., 2015). Any changes that have been adopted to support higher quality of learning, live on the periphery of the system (Penuel et al., 2015), and they are only adopted as far as they do not conflict with or disrupt the existing educational system.

The traditional higher education institute is made up of many discrete positions organized hierarchically to maintain control of the system (Szelenyi, 2000). Higher education is a manmade, complex system with many stakeholders. The government has regulatory and funding control over higher education, adding another layer of complexity. The polytechnic higher education system in Canada exists to support the health of the economy by building a talent pipeline for frontline workers (Polytechnics Canada, 2020). In order to continue to support the economy in the digital age, we need to reimagine the system of higher education. This is what makes education reform a desirable emergent phenomenon.

In contrast to the education system, learning is a process that exists only by doing, through dialogue and hands-on work. Learning is a process whereby thinking is continually refined through expression, iteration and constructing artefacts (Blumenfeld et al., 1991). Learning exists through interactions between people (Anderson, 2003a; Anderson, 2003b; Bianchi et al., 2018; Kolb, 1984). Learning is not owned by an individual (Papert, 1996). An important aspect of learning occurs in the space between people, when inside an interaction through the exchange of deliberate dialogue, information modifies strategy through feedback loops (Mubuuke et al., 2017; Ravenscroft, 2017; Senge, 1990a; Stirling et al., 2017).

Similar to learning, leadership is also a process. Leadership is human and intentional (Fenwick, 2010). For the purpose of this case study, leadership is an example of a strategy or action that agents can employ through interactions with other agents (Axelrod & Cohen, 2000). Observing the process of leadership unfolding during an interaction may reveal elements that enlighten how emergent phenomena come to be. Interviews with the participants in this study revealed how they are experiencing the interaction and how it influenced their actions that followed. According to the scientific school of Vygotsky, not every social interaction and social relationship are equal; relationships form when social interactions persist and evolve over time (Rubstov, 2020). Education reform is an emergent phenomenon that can arise from a collection of self-organizing agents (Johnson, 2009), i.e., agents that have formed relationships. This social collective activity is internalized individually (Rubstov, 2020). Leadership is experienced and expressed individual to individual. In order to uncover how leadership influences education reform, a basic understanding of complexity is required.

Complexity and Complex Systems

The motivation of this case study was to study leadership through a complexity lens. Complexity refers to a large number of elements interacting in many diverse ways (Cleveland, 1994). Complexity is the observable behavior of a complex system (Johnson, 2009) and is rooted in patterns of interactions among agents (Axelrod & Cohen, 2000). Complexity is rich interconnectivity which allows us to see how leadership emerges within a complex network of people, places, and conditions (Uhl-Bien & Arena, 2018). Leadership is a strategy or action that an individual agent employs (Axelrod & Cohen, 2000; Moroni & Cozzolino, 2019). Complexity arises when many agents are employing many different strategies over a period of time.

The case study methodology selected for this study is an appropriate choice to explore complexity because the case, the blended learning project, cannot be separated from its context, the polytechnic institution, or be studied independently (Stake, 1995). This naturalistic quality of case study methodology makes it a good fit to ensure that full consideration of all the connections inherent to the case are included in the data generation and analysis. The blended learning project is a coherent and integrated system in its own right. Within this system, the unit of analysis, which is the interaction between two agents, lacks the boundedness that the blended learning project provides.

Not every system is a complex system. A city is a complex system (Moroni & Cozzolino, 2019) whereas a clock, though complicated, is not a complex system because it is made up of heterogenous components (Cilliers, 1998; Klaus & Liebscher, 1979 as cited in Schwaninger, 2009). A contextual example is that a residential building structure is complicated but educating individuals to become Red Seal endorsed carpenters in Canada is complex.

The literature reveals that complex systems have eight common characteristics (Axelrod & Cohen, 2000; Johnson, 2009; Uhl-Bien, 2012). The first is that the system is made up of a compendium of many interacting objects or agents. The second is that information acts as a mediator to change agent behavior; this process is referred to as memory or feedback. Third, the agents employ and adapt their strategies according to the information they are receiving in the hope of improving their performance. Fourth, is that complex systems are typically open systems, meaning that the system is influenced by its environment. This leads into the fifth characteristic, complex systems appear to be alive, that is to say that they continually evolve due to the interacting agents adapting to feedback. The sixth characteristic is that complex systems

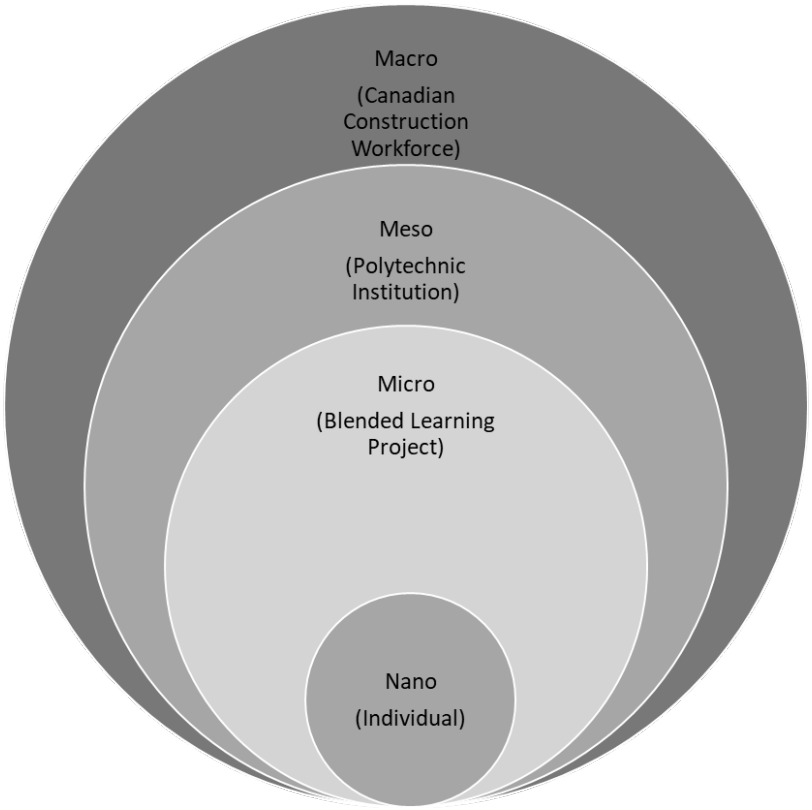
exhibit emergent phenomena. The seventh, they are self-organizing and evolve in the absence of any central control. Lastly, complex systems display both ordered and disordered behavior.

Contextual Details of This Complex System

Leadership has commonly been described as acting locally but impacting globally (Geddes, 1915). The skilled trades shortage is a prime example of a global problem that can only be overcome with local action. Before introducing the problem statement, it is necessary to disentangle the nest of this complex system by looking at the macro, meso, and micro layers which are illustrated in Figure 1.

Figure 1

Contextual Nest of the Case Study



Macro: Canadian Construction Workforce

The economic viability of Canada depends on many factors. One significant factor is companies having access to a substantial talent pool of skilled trades workers. The construction workforce is a significant piece of the Canadian economy accounting for 65.8% of the entire workforce in Canada; almost 9.6 million people have their livelihood tied to the industry (Statistics Canada, 2019, 2018, 2017). Skilled trades are the hardest positions for employers to fill, with engineers and technicians being fourth and fifth respectively (Manpower Group, 2015, p. 3; 2018, p. 6). In fact, filling these roles is getting even harder. The 2018 Talent Shortage Survey results indicated that one in four employers said filling roles in the skilled trades is even harder this year than last year (Manpower, 2018, p. 6). Of this workforce 21% are over the age of 55 and only 14% are between the ages of 15-24, leaving a substantial gap in new talent entering the trades. This problem is worsening and requires an intervention if it is to be resolved.

Demographics alone are not to blame for the skilled trades shortage. The construction industry has been suffering from low productivity, not just in Canada but across the world (Chancellor & Abbott, 2015; Hughes & Thorpe, 2014; Li & Liu, 2010; Schleifer, 2002; Xue et al., 2008). This is yet another factor contributing to the skills shortage. While other industries, like agriculture and manufacturing for example, have made efficiency improvements and decreased their workforces as a result (Baldwin & Gellatly, 2007; Statistics Canada, 2018), the construction industry has not.

Studies have shown that productivity in the construction industry could benefit from more skills training, refining experience-based learning, and educational attainment (Chancellor & Abbott, 2015; Pothier & Sawhney, 2020; Sweetman, 2002). However, Canadians still prioritize university over an apprenticeship, continuing to perpetuate a career in the trades as a

form of inferior employment (Schleifer, 2002) despite the jobs left unfilled and the personal financial gain. This false perception of skilled trades as inferior employment continues to contribute negatively to resolving the skills gap, adding yet another dynamic to be considered in the design and implementation of a successful intervention.

Meso: Polytechnic Institution

The mission of any polytechnic is to produce a skilled workforce. Polytechnic institutions do this by engaging adult learners in applied education. The polytechnic institutions in Alberta deliver credit programming which concludes in a certificate, diploma or undergraduate degree. The Alberta polytechnics also deliver apprenticeship training, which has both provincial and territorial jurisdiction from Alberta and the Northwest Territories. The apprenticeship system includes trades such as carpentry, cabinetmaking, steamfitter, pipefitter, plumbing, welding, sheet metal, glazing, roofer, machining, and industrial mechanic, each with its own complex web of stakeholders. Stakeholders within the system have decision-making responsibilities and include: the provincial government, higher education institutions, other training providers, employers of large, medium and small companies, and the apprentices themselves. Stakeholders of the system do not have direct responsibilities but interact through influence. Stakeholders of the system include: the federal government, the secondary education system, different unions and trade associations, as well as the general public as the end consumer of quality craftsmanship. The polytechnic also engages in contracts with employers to design and deliver corporate training education directly to employees, sometimes locally and often internationally. The institute also takes on applied research projects in partnership with industry.

In an industrialized society, apprenticeship was an ideal system. The concept of an apprenticeship, where an inexperienced individual enters the workforce to learn a particular set

of skills to the point of mastery as defined by an industry standard from an employer, has existed since the Middle Ages (Apprentice Mobility Executive Group, 2016, p. 3; Ratcliffe, 2002, p. 1). Although the industry standards for what constitutes mastery have continued to evolve, the education and training methodology have gone through very little evolution. Apprenticeship differs from other forms of post-secondary education in that the student gains 20% of their education from the institute and 80% from the employer as they progress through a one- to four-year trade. The apprenticeship system is well-established and is the prominent method of vocational education that polytechnics deliver; it is a sophisticated source of well-trained, experienced tradespeople (Robinson Fayek et al., 2006, p. 1567). The apprenticeship system has heavily influenced all the adult learning that the polytechnic engages in.

Although this polytechnic in Canada trains over 5,000 skilled trades and technicians annually, there is institutional capacity to train more. It is critical that all avenues are considered for reaching wider audiences to help fill the apprentice talent gap in Canada. Blended learning is one such avenue, and became the foundation for designing and implementing an intervention aimed at resolving the skills gap. It also forms the micro context, the bounds, in this proposed case study on enabling leadership.

Distance Education, Online Learning, and Blended Delivery. Polytechnic education provides learning experiences that enhance an apprentices' skills, knowledge, and abilities in relation to their trade. Polytechnic education has a long history of making use of technology to deliver this training. There are many synonyms used in the literature to describe the use of technology in delivering education at a distance, such as: e-learning, distance learning, distance education, online instruction, web-based learning, and computer-assisted instruction (Abrami et

al., 2006). In practical application, there are very clear differences that vary institution to institution.

This polytechnic institution has a long history delivering distance education. Distance education at this institution was the mailing out of a self-instructional course package and the mailing back of the completed assignments. The lack of systems and structures in place to support distance education, pushing it to the periphery of credit programming, has reinforced the false narrative that distance education is inferior and of lesser quality, stunting its possible evolution to adopt better two-way interaction. A report completed in 2005 by Tony Bates provided the institution with a defined strategy and implementation plan to leverage online technologies for education delivery that the institution adopted with questionable success. By nature of the hands-on shop activities and the theory portion, blended provides an opportunity to benefit from the best of both previous delivery modalities. Despite challenges with past education reform attempts, this institution is well-positioned to successfully expand their blended delivery.

Micro: Blended Learning Framework Project

The immediacy of the skills shortage and the high failure rate of education reform around the world (Dainov, 2007; Johnson, 2020; Kurelic & Rodin, 2012; Miller & Weiss, 2008; Murphy, 2017) have both influenced the need for an evidence-based practice, an interventional research method that will inform current practice (Brown, 1992). The blended learning framework project is a collaborative effort by researchers, practitioners, and other education stakeholders to iteratively improve teaching and learning in a defined problem area (LeMahieu et al., 2017, p. 26). This focus on collaboration provided an ideal setting to conduct this doctoral research study as the collaborative interactions provided an environment ripe for data generation

and analysis. The blended learning framework project applied the process of value co-creation. Value co-creation is a collaborative activity for the purpose of innovation (Ballantyne & Varey, 2008; O'Hern & Rindfleisch, 2010).

The blended learning framework project engaged faculty, administrators, and managers across the institution in an effort to improve teaching and learning in applied education at this polytechnic in Canada. The blended learning framework project was a specific example of a value co-creation process which will be discussed in detail in Chapter Two. The project interacted in virtual settings, using platforms such as Microsoft (MS) Teams and Zoom, to facilitate dialogic exchanges. The purpose of the project was to co-construct and implement a blended learning framework that then guided and improved the applied education practice for both teachers and learners. Research participants were recruited from this population of project participants.

Problem Statement

The macro context in which the problem addressed in this study being explored was the global shortage of qualified skilled trades people; the meso context was the polytechnic institution that delivers apprenticeship training. The micro context, the case, was the co-construction and implementation of a blended learning framework project. The project involved taking curriculum that had been delivered only face-to-face and adapting it to distance education practices utilizing online delivery methods. The goal of the project was to increase the availability of training in hopes of making a positive contribution in addressing the skilled trades shortage. These layers of complexity form the contextual nest around the problem that was explored.

The professional conundrum, the problem being explored in this study, was how does an individual employ leadership strategy through interactions with their colleagues to contribute, either positively or negatively, to the success of the blended learning framework project. More broadly, how does a single agent employ leadership strategy through interactions with other agents to, positively or negatively, contribute to the success of education reform. This is an important question to be asked because "despite many attempts to reform the educational systems in terms of promoting educational practice and its final goals – the promotion of students' learning and knowledge, little changes have been achieved in the last two decades" (Joksimovic & Manic, 2018, p. 12). Shifting focus away from "Why do reforms fail?", and towards "How are agents interacting during a reform?" revealed new information to inform leadership strategy and practice, and ultimately the success of future education reform events.

Statement of Purpose

Past studies employing Complexity Theory have demonstrated through computational modelling an emergence phenomenon that arises from successful strategy of agents over time (Chakrabarti & Sinha, 2016; Correa, 2020; Correa et al., 2019; Santamaria-Bonfil, 2017). But these models are not able to illuminate how the interactions play out or give voice to the personalization and nuance of human interaction. According to Anderson et al. (2014):

> There is transformative potential within contemporary educational discourse and dominant political formations. An important task for researchers, then, is to identify those points of transformative potential, to broaden the limit-horizon of the possible, and to expand the scope of educational change. (p. 340)

The results of this case study can be used to inform education reform and fuel transformative and sustainable change. I, the researcher, designed a study that gave voice to the dyadic interaction between agents illuminating points of transformative potential.

The goal of the study was to grow our understanding of leadership strategy enacted by agents during a period of change in order to paint detailed pictures of specific interactions that are of high value to individuals. This knowledge will help break the mold of assigning leadership styles to individuals which prematurely stunts leadership growth and development. Embracing CLT allows an individual the freedom to see how fluid leadership is from one interaction to the next, and even within a single interaction. It opens the door to be able to treat every problem as a new, unique problem and not revert to past behavior. In today's changing world, this lens is indispensable.

The findings that resulted from this case study have three-fold significance in adding to the body of knowledge on leadership. First, they have addressed a gap in the CLT literature regarding strategy and agents by focusing on the enactment, experience, and value of human agent interactions. Second, the findings have addressed a gap in the CLT model proposed by Uhl-Bien and Arena (2017) by expanding our understanding of the enabling leadership strategies. Third, the findings have added to the body of knowledge in the context of the polytechnic.

Research Question

The central question that guided this study was: how is leadership strategy enacted, experienced, and valued by agents during the interactions that take place in a value co-creation process, like the co-construction and implementation of a blended learning framework project?

The context for this study was a Canadian polytechnic that in the past five years has seen a cultural shift from a rule-based, hierarchical organization, towards a framework-based, networked organization. Although a digital transformation was well underway, COVID-19 both disrupted and accelerated the process. As an applied educational institute that is built on the foundation of student success, the co-construction and implementation of a blended learning framework project provided a rich landscape to observe and deepen our understanding of leadership strategy during periods of large-scale change.

The nano focus of this dissertation, the unit of analysis, is the one-to-one interactions that occur between the participants during the project. This case study employed a qualitative interpretivist methodology and used the Promoting and Assessing Value Creation in Communities and Networks Conceptual Framework tool created by Wenger, Trayner, and de Laat (2011). The resulting value-creation stories have given voice to how the participants enacted, experienced, and valued leadership strategies during the project. The methodology will be further elaborated on in Chapter Three.

Summary of Chapter One

This chapter has set the stage for the case study, explaining each layer of complexity and how it contributes to the contextual nest around the problem driving the purpose of this study. This research has produced a descriptive case study using qualitative research methodology to create value-creation stories on how leadership strategy is enacted, experienced, and valued by agents in the system. This research addresses a gap in the complexity educational leadership research literature.

Chapter Two will elucidate the three themes that informed the research design: CLT, value co-creation (VCC), and interactions. The theoretical underpinning of this dissertation,

complex adaptive systems and complexity theory, will be also explored further in Chapter Two. This is followed by the methodology chapter, which further discusses the tool that was used to produce the output of value-creation stories, the research plan, and the ethical considerations for this case study. Chapters that cover the findings, analysis and discussion, and conclusion complete this body of work.

Chapter 2: Literature Review

"Leadership and learning are indispensable to each other."

– John F. Kennedy –

This case study research was built on three thematic constructs:

1. CLT as a paradigm shift in leadership practice,
2. VCC as a specific method of collaboration, and
3. Interactions as the space between two agents whereby leadership is an action an agent employs.

Chapter Two is organized from the highest level of complexity, supra, through to the lowest level, nano. First, the supra global philosophical foundations in leadership theory is explored, ending with a detailed account of CLT. Past research studies are highlighted to demonstrate discoveries that have been useful for leadership practice and how the application of CLT uncovers new insights for further improvement. Next, the meso level of complexity is explored through a closer examination of the polytechnic institute as a complex adaptive system.

The second key theme of this dissertation is VCC, a specific method of collaboration that creates the space for leadership to be studied at the micro level of delivery and practice in polytechnic education. This chapter engages in an extensive discussion of VCC, including its theoretical components and its transformational impact on managerial practice. This comprehensive literature review demonstrates support for incorporating the Promoting and Assessing Value Creation in Communities and Networks Conceptual Framework tool created by Wenger, Trayner, and de Laat (2011) which will be explained in detail in chapter three.

The third and final theme is interactions, specifically dyadic interaction. Dyadic interactions are also considered collaborative dialogue in the second language acquisition research (Chen, 2020), in teacher education (Stewart et al., 2020) and in the field of applied linguistics (Ahmadian & Tajabadi, 2020). Collaborative dialogue is a specific interaction where two or more people engage in joint problem-solving and knowledge building (Ahmadian & Tajabadi, 2020, p. 133). This dissertation takes the position that collaborative dialogue is a critical element to fuel successful education reform. This research aimed to expand our body of knowledge in complexity theory and inform leadership practice for the purpose of advancing education reform by illuminating the nano level of complexity by uncovering and analyzing collaborative dialogue,

Global Level of Complexity

The global, or supra, level of complexity houses the philosophical and theoretical underpinnings that form cultural worldviews. In this section, the paradigm shift that is taking place in society is acknowledged before introducing complexity science. Next, leadership theories are highlighted by taking a brief evolutionary journey to demonstrate the changes leadership theory has undergone as our global worldview has evolved. The shortcomings that develop in one's leadership practice, when founded on traditional leadership theory, are also highlighted. This section ends with a research study founded in CLT to validate its pragmatic strengths for improving leadership practice.

Paradigm Shift

Capra (1986) defines a social paradigm as "a constellation of concepts, values, perceptions, and practices shared by a community, which forms a particular vision of reality that is the basis of the way the community organizes itself" (p. 3). Society is going through a

paradigm shift from a mechanical worldview towards an ecological worldview. The mechanical paradigm values competition over collaboration, views females as subsumed under the male, and results in systems designed for unlimited economic and technical growth (Capra, 1996, p. 6). In contrast, an ecological paradigm sees the world as "a network of phenomena that are fundamentally interconnected and interdependent" (Capra, 1996, p. 7). Higher education has participated fully in the mechanical worldview embracing globalization and massification for financial growth (Knight, 2008). It has left us in our current state filled with the pressures of continuous growth and a system that was designed for production and consumption rather than sustainability (Uhl-Bien et al., 2007). As the societal values shift, higher education struggles to keep up with the pace of change. In order for higher education to adapt to this new worldview, a new way of learning and leading is required. This research may inform the emergence of innovative educational leadership which could positively impact education reform.

Complexity Science

If you were educated in a typical Canadian secondary school system, you were taught that scientific inquiry is a method to determine cause and effect using a linear thinking process. This reductionist approach has been useful in increasing our foundational knowledge in all fields but it has serious limitations in improving real-world practice in today's complex world. Leaders in higher educational institutions are experiencing complexity in such forms as: volatility of economic job markets, uncertainty in government funding, and interconnectedness of systems (Capra, 1996; Uhl-Bien & Arena, 2017). Linear thinking created this web of complexity, but non-linear thinking will be required in order to manage effectively within it (Uhl-Bien, 2012).

Complexity science is characterized by non-linear thinking and allows for making connections between previously unrelated phenomena (Johnson, 2009). Complexity science

recognizes the importance of the interconnectedness of systems and provides a lens to reimagine higher education, moving away from the hierarchical view towards a networked view (Capra, 1996). The gift of complexity is that it allows us to look at systems we already have studied in a new way (Johnson, 2009). The essence of complexity is that "simple bits interacting in a simple way may lead to a rich variety of realistic outcomes" (Johnson, 2009, p. 17).

Complexity theories are being developed and applied in many different fields: city planning (Moroni & Cozzolino, 2019), physics (Capra, 1996), and medicine and health care (Khan et al., 2018; Miles, 2009; Nilsen et al., 2020), to name a few. CLT assists in managing the opposing forces inherent in complex systems and provides a method for intervention that can start to influence people and culture towards a new desired state. CLT has great utility in higher education to assist leaders in effectively managing change. Before looking at CLT in more detail, it is worthwhile to take a brief evolutionary look at leadership theory.

Leadership Theories

A meta-analytical empirical research study conducted by Jackson (2020) provides evidence suggesting that since the Romans established a list of leader personality characteristics called the *Romanitas* over 2000 years ago, not much has changed regarding our thoughts on leadership. Many leadership theories have been based on traits and characteristics of what a good leader is or needs to be (Bhasin, 2019; Borgatta et al., 1954; Harrison, 2018).

Starting with the great man theory, a 1954 study by Borgatta et al., hypothesized that men identified as "great men" would remain "great men" over a series of random sessions. A great man was identified on the basis of task ability, individual assertiveness, and social acceptability. The evidence derived from their research supported their hypothesis. This 70-year-old research example illustrates that time and place matter, and that context is everything. The characteristics

chose to ignore much of what we value in contemporary society today; diversity and inclusion are missing.

At about the same time as the study above, researchers were developing other theories like Trait Theory, suggesting that leadership is based on some universal given attributes, and Skills Theory, which focuses on the abilities of a leader (Harrison, 2018). According to Harrison (2018), next came behavioral theories that looked at patterns of actions (autocratic, democratic and laissez-faire) which opened the door for a paradigm shift that leadership could be developed and trained for, that it was no longer something you were born to be.

Contingency theories advanced practice further by emphasizing the environment that a leader was operating in and uncovering the role this played in successful outcomes (Heller, 1973; Mills & McKimm, 2016; Popp & Hadwich, 2018). By the mid 1960's, the Fiedler Model was developed which looked at leadership styles, defining the situation, and then matching leaders to the situation to have effective outcomes (da Cruz et al., 2011; Popp & Hadwich, 2018). Other theorists started to look at the role of followers; Hersey and Blanchard's Situational Leadership looked at follower readiness and identified four leadership styles: telling, selling, participating, and delegating (Bhasin, 2019). Leader-Member Exchange Theory demonstrated that leaders form a range of relationships with their followers from high-quality socioemotional relationships with some, and low-quality transactional relationships with others (Matta & Van Dyne, 2020). Path-Goal Theory revealed that there are four types of leaders: directive, supportive, participative, and achievement-oriented who motivate followers through the accomplishment of work (Bickle, 2017). All these examples fall under the umbrella of contingency theory and they broadened our worldview that leadership was made up of traits, behaviors and situations, and still provide some utility in framing research and practice today.

During this same time, some researchers were focused on predicting results and outcomes. Beginning with Weber in the late 1940's, and then popularized by Burns in the late 1970's, Transactional Leadership Theory has had staying power. It lists desirable characteristics of the leader (goal-oriented, thrives on rules, opposed to change) and remains the prevalent leadership methodology used in military, policing, and first responder organizations today (STU Online, 2018). It provides predictable structure for individuals to operate effectively in high-pressure situations that are completed using repetitive tasks.

Both research and practice have positioned transformational leadership as the higher order and more desirable leadership style, perhaps even the saving grace to transactional leadership. Transformational leadership has been studied for over 30 years (Abelha et al., 2018) in many different organizations and across many cultures (Takahashi et al., 2012). Based on reductionism, a centuries-old scientific construct (Andersen, 2001), transformational leadership does not offer a new perspective for 21st century challenges like CLT does. Transformational leadership has progressed leadership practice since its inception, and has been popular because transformational leaders are considered to have strong influence over their followers' attitudes and behaviors through empowerment, not control (Abelha et al., 2018, p. 517; Passakonjaras & Hartojasti, 2019).

The following section will highlight how research, founded in traditional leadership theories, has made significant contributions to the practice of leadership. It will also highlight how they continue to fall short on optimizing leadership practice for the 21st century.

Advancements and Shortcomings. A recent mixed-methods factorial experimental design that looked at vertical e-leadership and appointed leadership, versus shared e-leadership and leadership that emanates from the team, found no statistical differences between motivation, group collaboration processes, or self-regulated learning skills; both groups' post-test scores increased equally (Yilmaz & Karaoglan Yilmaz, 2020). However, the qualitative analysis revealed negative themes emerge from the vertical e-leadership approach, including a lack of team spirit and an unfair distribution of responsibility. In comparison to shared e-leadership, the negative themes were much fewer. In both leadership styles there was qualitative evidence generated from the participants in support of distributed control. Distributed control eliminates the central leadership role in a group and instead, a scale-free, hub-type, or cluster where like attracts like is observed (Goldstein et al., 2010; Yilmaz & Karaoglan Yilmaz, 2020). Distributed control is a key tenet of CLT.

A second study used a cross-cultural sample of 554 graduate and undergraduate students from Europe, China, and the United States to examine the relationship between the perception of leadership style (transformational, transactional, laissez-faire, and aversive), mindset (fixed or growth), and attitudes toward error learning (Bligh et al., 2018). Their study found that a transformational leadership style is associated with the most positive attitudes toward employee error learning. The study contributes to the advancement of leadership practice, specifically, "it is commonplace to discuss mistakes and failures as critical components of the learning process, and in a quickly changing world, these components are increasingly critical to organizational success" (Bligh et al., 2018, p. 116). This evidence of error learning supports non-linearity as a critical path to positive ends. Non-linearity is a key tenet of CLT.

A quantitative study exploring the role of the principal's leadership style in encouraging participation in professional learning communities (PLCs), was undertaken with 12,500 teachers from Thai basic education schools (Somprach et al., 2017). Of the nine leadership styles considered to be predictive variables, only four were found to be statistically significant: learning leadership, transformational leadership, collaborative leadership, and invitational leadership. Together they accounted for 55.6% of the variation in teacher's participation in PLCs. However, the results of this study were in contradiction to past research studies that found that political leadership, sustainable leadership and ethical leadership can assist in promoting PLCs (Hargreaves & Fink, 2004; Nye, 2008; McAllister, 1995). Contradictory, research results such as these support the contextual specificity inherent in leadership and that broad descriptions that categorize leadership into different styles have generalizability limitations for practice.

The leadership theories and research examples discussed so far align with a mechanical, reductionist worldview (Capra, 1996). Leadership theories have evolved so much over recent decades that some consider traditional leadership theories to be obsolete (Canedo et al., 2017). One such notable scholar, Thomas Greenfield, has been using provocation to challenge traditional education administration notions since the 1960's (Rizvi, 1994). Thanks to his work and many, many others, scholarly debates and open dialogue continue to fuel innovations in leadership praxis.

This summary of leadership theories demonstrates that although traditional leadership theories have progressed leadership practice, they have shortcomings. To continue to progress leadership practice, a paradigm shift towards an ecological and holistic worldview is required. This paradigm shift supports the need for new leadership theories. The design of this research study was founded on the premise that Complexity Leadership Theory aligns with an ecological

and holistic worldview, and therefore supports the paradigm shift that is required to further advance leadership practice (Capra, 1996).

Complexity Leadership Theory (CLT)

Complexity Leadership Theory positions leadership not as qualities that a person is born with or even develops; rather, leadership is an action that people experience (Lichtenstein et al., 2006; Seers, 2004). Leadership is an experience that is observable because it occurs in the space that exists between people and ideas during an interaction (Lichtenstein & Plowman, 2009; Lichtenstein et al., 2006). Leadership can change, morph, and flow as an interaction continues, as the players contribute and exchange dialogue. Leadership emerges through dynamic interactions and it is an outcome of relational interactions among agents (Baltaci & Balci, 2017; Lichtenstein et al., 2006). In relation to the historical journey of leadership in prior paragraphs, this is a relatively new way of framing leadership.

In contrast to more traditional leadership theories, CLT does not treat people like they are one-dimensional; the desire to have central control can be more easily surrendered. CLT adopts a non-linear, more realistic representation of how organizational systems work in that the input, the action, does not predict the magnitude of the change (Zimmerman et al., 1998). Complexity leadership, born from holism popularized in the 1940s (Andersen, 2001), offers a fresh, networked perspective to operating within a polytechnic. Holism opposes reductionism, in that to truly understand and see the phenomena in question, you cannot separate a system into its parts (Holland, 1998; Marion & Uhl-Bien, 2001). This concept is a key tenet of CLT, that to influence the CAS, one needs to understand the whole system.

In practice, CLT provides a framework for leaders to be able to recognize the features of their own organization, making it more understandable and more significant (Rosenhead et al.,

2019). Baltaci and Balci (2017) define complexity leadership "as adaptive mechanisms developed by complex organizations in new conditions required by the information age, rather than technical problems entailed by the industrial age" (p. 30). CLT is the interaction of administrative, adaptive, and action-centered or enabling leadership (Uhl-Bien, 2012; Uhl-Bien et al., 2007). These interactions are visible on the polytechnic campus daily; in executing the publishing of schedules on time (administrative leadership), conflicts with implementing innovative teaching arrangements like team teaching (adaptive leadership) and the operational limitations of the software system, which can only accept a single teacher assigned to each class time. This entangled leadership model will be discussed in the next section.

Complexity Leadership Theory does not negate the relevance and usefulness of other leadership theories, rather it augments existing approaches (Marion & Uhl-Bien, 2001). It provides a different lens, a different angle, to look at a situation and determine how best to intervene in a way that benefits the entire system. As Marion and Uhl-Bien (2001) articulate, "leadership effectiveness cannot be built exclusively around controlling the future" (p. 394). CLT broadens our perspective and allows us to step back from the immediacy or the isolated event and see it as part of the much larger and much more complex web of interactions. This interconnectivity is a feature of our world which is not new in human history, rather, it is more easily observable today due to technology, like the internet (Goldstein et al., 2010; Uhl-Bien & Arena, 2018; Uhl-Bien et al., 2007). It is also the pace of interactions that is more easily observable and responsible for amplification and continuous acceleration (Bradley et al., 2020).

Learning is messy work (Weimer, 2012). Leadership is messy work (Finkelstein, 2005; Lichtenstein et al., 2006; Marion & Uhl-Bien, 2001). In higher education, the downside to a hierarchical structure and the role that has on interactions, such as learning and leadership, is that

the structure is inherently resistant to change (Beaudoin, 2002) and is designed for stability that prevents innovations in teaching (Marion & Uhl-Bien, 2001). Higher educational institutions need to develop new ways to challenge the status quo, support innovation, and messy learning. CLT recognizes the messiness that exists in education and rather than trying to control it, gives us permission to embrace it (Khan et al., 2018). Complexity Leadership Theory provides the framework that makes room for these considerations to enter leadership practice.

In CLT, the leader is characterized as the catalyst. A catalyst leader possesses the ability to affect organizational learning through social interactions (Lotrecchiano, 2010, p. 56; Quinn, 2004). Leaders as catalysts parallel how Weimer (2012) asks teachers to engage in learner-centered teaching; a leader can engage in follower-centric leading to serve as the catalyst in a polytechnic. Just as a teacher can serve as the catalyst for their students to learn, so can other students serve as the catalyst to facilitate learning; a leader in title can serve as the catalyst for change, but so can other individuals participating serve as a catalyst to facilitate change. Defining the leader as a catalyst creates space for more interaction to occur and creates space for leadership to be seen as more fluid. Defining the leader as a catalyst allows for social interactions to evolve, and creates the adaptive space for change and innovation to occur (Uhl-Bien & Arena, 2018).

The traditional concept of leadership maintains that the education system relies on an appointed leader, a dean, a provost or a president; - a visible human center of control (Fenwick, 2010). CLT recognizes distributed control rather than centralized control (Zimmerman et al., 1998, p. 7). Similar to distributed leadership, CLT recognizes leadership irrespective of role or position (Keppell et al., 2010). Although the structure of education has these positions, the system does not depend on these centers of control. Indeed, it is impaired by them, not served by

them (Sumner, 2000). An example in the polytechnic is the long chain of approvals required to change a course outcome inside a single course. Each center of control must review and approve the change due to the structure of education, yet contributes no knowledge or value to the course outcome. The review process impairs the education system through increased costs, poor use of resources and additional time delays.

CLT removes ownership and the power attached to the act of leadership from a single person with desirable characteristics towards recognizing leadership as an action or a strategy that an agent employs (Axelrod & Cohen, 2000). Every interaction is unique, and the role we play in each interaction is also unique. CLT recognizes the need for leaders to achieve the simultaneous goals of learning and performance, of adaptability and innovation and calls this enabling leadership (Uhl-Bien & Arena, 2018). This is what allows for innovation and learning to occur at a rapid pace, and prevents the system from becoming stagnant (Lichtenstein et al., 2006; Marion & Uhl-Bien, 2001).

Complexity Leadership Theory resonates with this researcher because it articulates the unpredictable reality of the leadership experience in higher education (Zimmerman et al., 1998) and by extension, polytechnics. Complexity Leadership Theory offers "a more realistic view of the future, in which surprise is anticipated rather than shunned" (Begun et al., 2003, p. 37). This is a critical viewpoint to have in practice, adding to its usefulness as a leadership theory for the digitized knowledge era of the 21st century (Beaudoin, 2002; Uhl-Bien et al., 2007).

Another practical asset is that CLT embraces the paradox that a leader encounters (Matlow et al., 2006; McClellan, 2010; Warner, 2001; Wheatley, 1999). McClellan summarizes it well in the following statement: "As we engage in such deep interpersonal interaction and change, thereby co-constructing our identity, we embrace and intuitively respond to complexity

and generate novelty through paradox" (2010, p. 42). Paradox is a characteristic of complexity and exemplifies the need for this paradigm shift in leadership theory.

Mental models are "deeply held internal images of how the world works" (Senge, 1990a, p. 163). Any attempt to change practice, without making the shift in mental models, typically results in no sustainable change (Argyris & Schon, 1996; McClellan, 2010; Senge, 1990a). Mental models need to change if one is to leverage CLT to improve leadership practice. In order to change our mental models, it can be inferred that interaction through dialogue is a plausible path forward.

Frustration and resonance are two more reasons to adapt complexity theory framework. Leaders are frustrated with traditional leadership strategies because life does not neatly unfold like a predictable plan; intensive information gathering and consensus building result in little to no change, and leaders are working harder with no impact to show for it (Zimmerman et al., 1998). In order to support the success of a large-scale educational reform effort, and to implement blended learning delivery to support a more innovative and technically competent workforce, CLT has merit in reducing leadership frustration and providing a roadmap that deeply resonates with individuals.

In essence, CLT is an innovative leadership logic, a new way of thinking that could influence how we design and conduct research in education in the future. Mason (2008) frames this as moving away from the traditional causal modelling and moving towards:

> modelling the specific, local linkages that actually interconnect actors, practices, and events across multiple levels of organization; and away from single interventions and simplistic solutions to the recognition of the need for coordinated changes throughout the system and to its constraining and enabling contexts and resources. (p. 10)

CLT represents a conscious shift from leaders as the direct source of change towards the acknowledgement that leaders can merely enable the conditions for change to occur. This is a very important distinction because it means that leadership can occur anywhere in the organization, at any level, and that different people may act as leaders at different times. Lichtenstein et al. (2006) go on to state that:

> A key contribution of Complexity Leadership Theory is that it provides an integrative theoretical framework for explaining interactive dynamics that have been acknowledged by a variety of emerging leadership theories, e.g., shared leadership (Pearce & Conger, 2003), collective leadership (Weick & Roberts, 1993), distributed leadership (Gronn, 2002), relational leadership (Drath, 2001; Uhl-Bien, 2006), adaptive leadership (Linsky & Heifetz, 2002; Uhl-Bien et al., 2007), and leadership as an emergent organizational meta-capability (Hazy, 2004; Hazy, 2006). (p. 3)

In summary, CLT embraces paradox, removes the power attached to the act of leadership from a single person with desirable characteristics, acknowledges distributed control, and provides a framework for leaders to be able to recognize the features of their own organization, making it more understandable. Complexity Leadership Theory sees the leader as a catalyst with the ability to affect organizational learning through social dynamic interactions and recognizes that leadership is messy, and the adoption of a non-linear approach may be better to deal with complexity than more traditional linear leadership theories.

Complexity Leadership Theory explains how I have experienced leadership. As someone who has held leadership positions for over twenty years and who attributes her professional success to learning, there is no doubt that these experiences influenced this research path. In today's digital age, the educational ecosystem is more complex than ever before. Inherently, this

makes operating as an effective leader in the system more complex than ever before. As Uhl-Bien so eloquently stated, "complexity must be managed with complexity" (2012).

Complexity Leadership Model

Uhl-Bien and Arena (2018) put forward a complexity leadership model that focuses on enabling adaptability based on a decade-long research and practice partnership. Their research revealed that leaders are biased towards pulling their organization into equilibrium, which denies the opportunity for networked agents to link up, preventing novel solutions. Leadership does not operate in any traditional sense in a CAS; it needs to be enabled by paying attention to conditions, such as information flows and loosening pressures, to create new windows of opportunity. Specifically, organizations that enable the networked structure of adaptive space are the most successful at innovating continuously. Uhl-Bien and Arena (2017) demonstrate how an organization can act as a CAS even though it has many hierarchical and bureaucratic structures still within its operations. The following subsections will discuss the complexity leadership model in more detail, highlighting the three types of leadership Uhl-Bien and Arena (2017) identified as critical for adaptability: operational, entrepreneurial, and enabling.

Operational Leadership. Operational leadership operates in the formal, operational space of the system in order to continue to generate efficiency and produce results (Uhl-Bien & Arena, 2017, pp. 14-16). The model resists the pull to order that would privilege operational needs over entrepreneurial thinking as it recognizes that the role of leaders also includes accommodating entrepreneurial initiatives and enabling leaders' attempts to drive change in the system. Their research revealed that "innovation is generated in the tension between entrepreneurial and operational pressures" (Uhl-Bien & Arena, 2017, p. 15). Operational constraints ensure that entrepreneurial initiatives do not become too "idealistic and lofty" so as

not to benefit the organization. At the core of operational leadership, three actions were identified to be most important: sponsoring, aligning, and executing. Sponsoring, aligning, and executing involve taking ideas generated in the adaptive space and positioning them for support in the operational system with appropriate resources in ways that enhance the overall organizational fitness.

Entrepreneurial Leadership. Entrepreneurial leadership operates in the local, entrepreneurial space of the system in ways that help the organization adapt to pressures and capitalize on opportunities (Uhl-Bien & Arena, 2017, p. 16). Entrepreneurial leaders focus on linking up diverse agents in a collective process that is in response to complexity pressures that challenge these same agents to create and develop novelty. These leaders exhibit flexibility, tenacity, and a bias towards action. They recognize that their ideas will morph as they move out of their local context into adaptive space and operational systems, as they remain initiating, iterating and socializing for innovation.

Enabling Leadership Unlike entrepreneurial and operational leadership, which has an understanding in the leadership literature, enabling leadership is new to the leadership lexicon (Uhl-Bien & Arena, 2017, pp. 16-19). Enabling leadership operates in the adaptive, networked space of the system that interfaces between the operational and entrepreneurial systems, and is a new way of thinking in response to complexity. There are six important practices that enabling leaders engage in, namely, linking up, creating bridges, leveraging adaptive tension, influencing with tags and attractors, creating simple guidelines, and network closure. Each of these is worth expanding on as this research study generated data that illustrated each of these practices in exquisite detail and revealed new information that helps us to understand these practices better.

Linking up is the practice of harnessing network connections by tapping into their energy for expansion and amplifying interactions to support emergence (Uhl-Bien & Arena, 2018, p. 17). Within the context of the co-creation and implementation of the blended learning framework project at this polytechnic in Canada, an example of linking up could be observed in a well-connected and well-respected faculty member talking about the framework in the staff lunchroom and the ears of otherwise disinterested faculty perking up, taking notice, and then emailing the project lead to inquire to learn more about the project. An enabling leader would be able to recognize that the well-connected faculty member needs to be supported to broadcast the favorable qualities of the framework across the organization, and perhaps a webinar is organized to facilitate that support.

Creating bridges, or brokerage, is the practice of supporting better information flow and opportunities for agents to link up as per the previous paragraph (Uhl-Bien & Arena, 2017, p. 17). In the context of the blended learning framework project at this polytechnic in Canada, an example of brokerage could be supporting the increase in occupancy of common spaces, like staff lunchrooms, water-cooler channels on MS Teams, and weekly project update emails, to the entire institutional staffing complement to support information flow across departments.

Leveraging adaptive tension, by either increasing or decreasing the levels of conflict, is an important enabling leadership practice to balance creativity and inaction (Uhl-Bien & Arena, 2017, p. 17). The current level of conflict within this Canadian polytechnic institution is relatively high. Differences in worldviews, needs, and preferences are at the surface as individuals attempt to continue working effectively in a post-COVID-19 world while provincial health and safety protocols leave very little room to accommodate differences. The blended

learning framework project provided an opportunity to observe adaptive tensions and how individuals coped in real time.

Influencing with tags and attractors involves listening, identifying the patterns within the language and symbols individuals use that seem to "stick" or have a desired impact within a small team, and then amplifying that impact across the whole institution (Uhl-Bien & Arena, 2017, p. 17). As defined by Marion and Uhl-Bien (2001), "a tag is any structure or information that catalyzes certain social behaviors" (p. 398). A tag can be a new technology, a new idea, a symbolic act, or even a leader. The blended learning framework project provides a setting to observe patterns of language, and then track specific conversations to measure what value or impact they have as time and sequence of events progress. One could imagine that a tag could be a new term, or an old term redefined, that resonates deeply with people and inspires them to change their behavior.

Network closure is when other members of the network, not the enabling leader, advocate the message and because of their advocacy, the attention of the right sponsors is gained and the project is successful (Uhl-Bien & Arena, 2017, p. 17). In the case of this study, an example could be that enough staff and faculty gain an understanding of the blended learning framework project that it is adopted across the institution, and students are assured of receiving a consistent and meaningful learning experience.

Lastly, creating simple guidelines that will enable individuals within the organization to engage in behavior that supports these desirable complexity dynamics (i.e., brokerage, linking up, and network closure) to flourish without any understanding of complexity is a key practice for an enabling leader (Uhl-Bien & Arena, 2018, p. 17). Creating these simple guidelines will be

led by project team members but will need to be edited and modified based on feedback from the larger polytechnic community to ensure that they are hitting the mark.

This section should have solidified for the reader that the ever-evolving global worldview of leadership is in and of itself, an example of an emergent phenomenon. Next, I will revisit the concept of complex adaptive systems (CAS) and discuss why a polytechnic institution is an ideal setting to generate a case study on complexity leadership.

Community Level of Complexity

Chapter One looked at the meso layer of complexity to set the stage for the purpose of this case study and define the problem statement. The different stakeholders in the community are made up of other higher education institutions, government agencies, and businesses that employ the graduates. To add credence to the pragmatism inherent in applying CLT to improve leadership practice for the purpose of advancing education reform, the reasons why the polytechnic institution is a social CAS will be unpacked further.

Complex Adaptive Systems (CASs)

To build a comprehensive understanding of a complex system, it is practical to first compare it to a simple system. According to Hayek (1967), in a simple system, one can use explanations of detail to make specific predictions. Comparatively, in a complex system, one can use explanations of principle to make qualitative predictions. The principles set out in complexity science better capture the messy nature of reality and better explain the interplay between the elements that comprise the whole (Norberg & Cumming, 2013; van de Wetering et al., 2017). The important point here is that our individual human ability to guide a complex system towards a predetermined, specific outcome, is unescapably limited, and that complexity needs to be embraced and preserved, not counteracted or avoided (Moroni & Cozzolini, 2019).

A CAS has the capacity to learn from experiences (Axelrod & Cohen, 2000; Miller & Page, 2007; Uhl-Bien & Arena, 2017; Uhl-Bien et al., 2007). A CAS is adaptive because the individual and collective agent behaviors adapt to changes in the environment (Miller & Page, 2007). According to Uhl-Bien and Arena (2017), "a complex adaptive system is a dynamic system that is able to adapt in and evolve with a changing environment" (p. 11). This collective agent behavior cannot be understood by reducing and studying a single agent because the whole is more complex than its parts (Holland, 1998). Examples of complex adaptive systems include climate, cities, markets, governments, social networks, traffic flows, the brain, and the immune system.

As discussed in Chapter One, not every system is a complex system. Not every complex system is a complex adaptive system. From this point forward, the focus will be on social complex adaptive systems, which comprise individuals and organizations (Axelrod & Cohen, 2000; Holland, 1996; Keshavarz et al., 2010; Zimmerman et al., 1998) and which have the characteristics described in the following subsections.

Open (Externally) A social complex adaptive system is an open system (Keshavarz et al., 2010; Wheatley, 1999; Uhl-Bien et al., 2007). Typically, open systems are influenced by their environment as evidenced by higher education co-evolving when government budgets reduce funding. Boundaries in systems are dependent but autonomous (Wheatley, 1999). A more open system has fewer boundaries and more possibilities when leaders recognize and optimize adaptive space for possibility (Uhl-Bien & Arena, 2017; Uhl-Bien & Arena, 2018; Wheatley, 1999).

A system's openness to its environment through boundaries continually evolves due to the interacting agents, both internally and externally, executing strategy and adapting to feedback

(Johnson, 2009). Complexity is associated with the intricate intertwining and interconnectivity of elements within a system, and between a system and its environment. This is called the fitness landscape for a particular system (Kauffman, 1993). The fitness landscape for two similar social complex adaptive systems contributes to the many differences that will exist even between the two, because they are open systems that respond to their environments (Keshavarz et al., 2010; Uhl-Bien et al., 2007).

Alive and Adaptive Like a mammalian cell, when a social complex adaptive system is at equilibrium, it is dead (Lichtenstein & Plowman, 2009; McKelvey & Lichtenstein, 2007; Osborn et al., 2002). The concept of far from equilibrium is when systems are forced to explore their space of possibility to create different structures and new patterns of relationships (Uhl-Bien & Arena, 2017). Strange attractors are the paths complex adaptive systems take that allow them to operate far from equilibrium and scale more challenging situations to reach new levels of performance (Boal & Schultz, 2007, p. 413). Strange attractors represent a path of innovation, which is in sharp contrast to attractors that represent the default choices that agents make that keep the organization running as it always has (Goldstein et al., 2010). It is impossible to predict which point in phase space that the trajectory of any attractor will pass through at a particular time, which moves the method of analysis away from quantities and formulas towards quality and patterns of dynamical systems (Capra, 1996). Boal and Schultz (2007) state that "by operating at the edge of chaos, organizations have a variety of distinct alternative responses with which to explore new opportunities" (p. 414).

Distributed Control Complex adaptive systems self-organize, they evolve in the absence of any central control (Johnson, 2009; Uhl-Bien, 2012). For example, consciousness does not arise from a single "master" brain cell that is directing the others (Chan, 2001). It is a

novel phenomenon that is observed because of the overall decisions by various neurons and cells in the whole system. In a social complex adaptive system, the concept of distributed control may not fully be realized (Keshavarz et al., 2010). Using higher education as an example, the hierarchical and bureaucratic structures remain, distributed control may be the aspiration but not the reality.

Paradoxical An acceptable definition of paradox is "contradictory yet interrelated elements that exist simultaneously and persist over time" (Smith & Lewis, 2011, p. 382). Social complex adaptive systems are filled with dynamics that combine both order and chaos, rendering them paradoxical. This co-existence of uncertainty or unpredictability is exactly where the adaptive capability in an organization houses capacity for the emergence of novel practices, processes or products (Goldstein et al., 2010). The edge of chaos is characterized by a state of paradox; order and disorder simultaneously exist in a system, stability and instability, competition and cooperation, and random yet structured (Axelrod & Cohen, 2000; Goldstein et al., 2010; Johnson, 2009). This paradox creates the creative tension required to generate innovation in the adaptive space (Uhl-Bien & Arena, 2017).

Specific to higher education, and also paradoxical, higher education institutions act dependently but autonomously (Keshavarz et al., 2010). Wheatley (1999) describes successful organizations as ones that embrace paradox instead of choosing one element over another. Traditional leadership theories describe either/or and trade-offs because you cannot have both. A social complex adaptive system contains both, and in order to operate in alignment with nature, to stop taking from nature and to better work within nature to value sustainability, the dichotomous view of substance rather than process needs to be amended (Hertz et al., 2020).

Shifting focus from substance to process, researchers can achieve theoretical insights that do not sacrifice the richness of the context (Hertz et al., 2020).

Wheatley (1999) describes successful organizations as ones that are self-renewing because they embrace paradox. It is plausible that adopting a framework that explicitly embraces paradox would guide leaders to make different decisions and implement different ways forward (Niesten & Stefan, 2019). Inherent in any polytechnic, any social CAS, there are challenges but, more importantly, potential for radical change (Cleveland, 1994). Fenwick (2010) states, "a complex adaptive system does not care about what it evolves into; it simply continues to adapt to its changing circumstances" (p. 92). Although this was implied to be a shortcoming of the concept, it is truly just a reality, neither weakness nor strength.

Information is a Mediator: Memory and Feedback A social complex adaptive system contains information. Information acts as a mediator to change agent behavior through either memory or a feedback process (Axelrod & Cohen, 2000; Johnson, 2009). There is a sensitive dependence on the initial conditions of a CAS proven mathematically in the 1960s by meteorologist Edward Lorenz (Capra, 1996, p. 134), the discoverer of chaos theory. The Lorenz model consists of three coupled nonlinear equations that from nearly identical starting points result in dramatically different, unpredictable outcomes (Gleick, 1987). This strange attractor became known as the Lorenz attractor, and as chaos theory matured, it began to be referred to more commonly as the "butterfly effect" (Capra, 1996, p. 134).

According to Goldstein et al. (2010), the overwhelming importance of the starting point to influence the path the system can take is strong evidence of memory. However, the authors go on to say that a non-linear pathway of change is possible when seemingly small leadership events eventually add up to cause a major shift in the attractor. The concept of memory helps to

explain why change is hard to implement and sustain, but the concept of attractors also provides clear direction on how leadership strategy and intervention can lead to sustainable change collectively, over time.

In a social complex adaptive system, such as higher education, the flow of information is a critical element within the system. Information influences interactions between agents in the form of policies, procedures or rules, organizational cultural norms, agent memory, and history reinforced through agent storytelling (Boal & Schultz, 2007). Feedback loops of information influence future interactions as well as the current interaction, and travel in formal and informal channels (Keshavarz et al., 2010). The information flow in social complex adaptive systems can be problematic and confusing as it can change or increase rapidly (Keshavarz et al., 2010). The data generation section in Chapter Three of this dissertation outlines my intention to collect evidence of information flows.

Network of Interactions (Internally) Agents within a social complex adaptive system interact repeatedly, each time uniquely, mediated by information in the forms mentioned above. Although agents are themselves unique, they fall into types; they "share some detectable combination of features" (Axelrod & Cohen, 2000, p. 35). The authors elaborate that innovation stems from an optimal balance of uniformity and variation within a population of agents that suits the context of that given time, place, and situation. They go on to say that variation can lay dormant for a long time but be pivotal at a later time given different environmental conditions. This demonstrates that not all interactions are equal, and that relationships form and break up. It also validates that interactions between agents are neither completely structured nor completely random.

In higher education there are patterns of agent interactions; examples include: weekly faculty team meetings, daily scheduled class time with students, and monthly town halls across disciplines. The interaction network in a social complex adaptive system can be even more complex and dynamic, and therefore more difficult to control than a CAS found in nature (Keshavarz et al., 2010). There can even be two parallel networks operating simultaneously, perhaps one more formal and the other more informal, and these may have different rules, values, and interaction patterns (Keshavarz et al., 2010). For all these reasons, interactions in social complex adaptive systems are described as networks of interactions (Lichtenstein & Plowman, 2009; Lichtenstein et al., 2006). Agents spend significant effort adapting to other adaptive actions which contributes to the network structure (Johnson, 2009).

Not all interactions are equal. Enduring interactions among agents form relationships (Alfasi & Portugali, 2007). According to Chan (2001), "complexity results from the inter-relationships, the inter-action and inter-connectivity of the elements within a system and between a system and its environment" (p. 4). In addition to mapping information flows, this research study will collect data that indicates relationships that are formed from the many dynamic interacting agents (Johnson, 2009).

Agent Strategy is Leadership Single agency is what each leader denotes in a system. Each agent is unique although has commonalities with others forming groups of types within a population (Axelrod & Cohen, 2000). Agents execute strategy through interactions in a system. Leadership is an example of a strategy an agent can deploy. A change in strategy leads to selection in the system (Axelrod & Cohen, 2000) which makes diversity or variation important for adaptation (Keshavarz et al., 2010).

Emergence, Emergent Properties, and Emergent Phenomena An emergent phenomenon is the outcome of the collective behavior of agents as a result of the interplay with multiple factors such as information, external sources, and internal resources (Axelrod & Cohen, 2000; Bradbury & Lichtenstein, 2000; Goldstein et al., 2010). An emergent phenomenon contains new emergent properties that do not exist at the individual agent level. Emergence is the process of this interplay of factors, and agents and is observed at the collective level. Education reform exists at the collective level because its properties simply are not present with any one individual. Emergence is brought about through dynamic, relational interactions among agents (Bradbury & Lichtenstein, 2000), which makes studying the interaction of individuals in a social CAS critical.

Self-organization is an example of emergence, and through observation may appear to be chaotic (Begun et al., 2003; Cleveland, 1998; Wheatley, 1999). However, not all emergence is chaotic (Goldstein et al., 2010). As has already been stated, an emergent property is something that cannot exist at the individual level but can only exist at the collective, systems level. From the interaction of individual agents arise some novel properties or patterns that could not have been predicted from understanding each particular agent because they do not exist when you look at a single agent. For example, consciousness is an emergent phenomenon that arises from the interaction of individual brain cells. It can only be observed by looking at the entire network of interactions. To observe a single brain cell would not allow one to observe consciousness because the pattern that creates consciousness requires the entire network. In higher education, the individual agents teach classes, design courses, and develop programs. Granting a credential to a student upon graduation is an emergent property of the higher education system. No single agent grants credentials, it is the collective system that grants credentials.

Uhl-Bien and Arena (2017) identified four signs of emergence: trends, tensions, opening of adaptive spaces, and information flows (p. 18). These complement the four phases of emergence identified by Goldstein, Hazy, and Lichtenstein (2010) which are disequilibrium conditions, amplifying actions, recombination, and stabilizing feedback.

This case study asked a population of agents to reflect on their interactions in a space of possibility, during the co-construction and implementation of a blended learning framework project, in order to reveal interactions that may provide insight as to how individual agency can lead to a large-scale change event like education reform, an emergent phenomenon. At the scale of the system, the interplay of agents shapes a hidden but recognizable regularity in the behavior of the whole system (Capra, 1996). Interview questions were designed to reveal signs of emergence, moments of transformative potential, and evidence to support the four phases of emergence.

Polytechnic as a Complex Adaptive System (CAS)

As demonstrated above, polytechnic institutions are social complex adaptive systems. However, the bounds of this case study are still a layer deeper in the contextual nest as this research has an embedded single case design. This case is the blended learning framework project within the polytechnic institution, an example of education reform. The unit of analysis is the one-to-one interactions between the participants involved in the blended learning framework project. In the next section, the project team level will be visited in order to demonstrate that it is a rich environment to generate a case study on how interactions and strategy are executed between agents working on a project within a social CAS.

Project Team Level of Complexity

When considering education reform, we may be thinking about institutional reform or system reform. However, change is enacted at a much lower level; it is within classrooms and individual departments, and through focused project teams. Without clear action at this micro level, purpose remains words on a page and institutions become stagnant. It is through collective practice that educational reform even becomes a possibility. The specific practice of collaboration is now applied, looking at it through a concept popular in the business world (Ballantyne & Varey, 2008; Díaz-Méndez & Gummesson, 2012; Elsharnouby, 2015; O'Hern & Rindfleisch, 2010; Vargo & Lusch, 2004), value co-creation (VCC), before diving into the nano focus, the unit of analysis, within this case study.

Value Co-Creation (VCC)

For many decades, markets have been shifting from the exchange of manufactured goods towards the exchange of specialized skills, knowledge and processes that rely on interactivity, connectivity, and ongoing relationships (Vargo & Lusch, 2004, p. 15). This shift from the tangible to the intangible ignited the need for a new paradigm in marketing. In 2004, Vargo and Lusch observed that need and service-centered dominant logic was born. This new paradigm focuses on the customer perspective, the utilization of the service, the intangibility of the exchange process, and the relationships during the exchange process. The six principles are outlined in Appendix A.

Although developed within the traditional business context, service-centered dominant logic has application in higher education (Díaz-Méndez & Gummesson, 2012; Dingyloudi et al., 2019; Elsharnouby, 2015; Voropai et al., 2019; Wenger et al., 2011). There are parallels here with the evolution in leadership theories, from the great man theory towards more participatory,

inclusive and collaborative theories. This reflects a more general shift in societal values - that people, regardless of position or role, want to be included in processes and have their voices heard, whether it be related to the development of a new product, the learning process, or a large-scale reform event.

Service-centered dominant logic in practice quickly became known as value co-creation in the literature (O'Hern & Rindfleisch, 2010). The authors describe value co-creation as "a collaborative new product development (NPD) activity in which consumers actively contribute and select various elements of a new product offering" (p. 88). As the concept was adapted and applied in higher education, Dollinger et al. (2018) defined value co-creation as "the process of students' feedback, opinions, and other resources such as their intellectual capabilities and personalities, integrated alongside institutional resources, which can offer mutual value to both students and institutions" (p. 210). Value co-creation is a distinct form of collaboration (Ballantyne & Varey, 2008). In other words, value co-creation is a specific practice or method to enact collaboration for the purpose of innovation. It gives people a voice in the process of change and is a mechanism for participation.

The literature acknowledges that value co-creation can be a chaotic process and therefore, may require a lot of effort to manage (Fisher & Smith, 2011; Hoyer et al., 2010; Prahalad & Ramaswamy, 2003; Vargo & Lusch, 2004). But the literature also shows that despite the additional effort, the benefits outweigh the cost. Ideas generated and products or processes developed will more closely mirror the true needs and will be of higher value to consumers (Hoyer et al., 2010, p. 283), or in higher education - students. By extension, in the context of this study, the blended framework developed will be of higher value to the staff, faculty and leaders,

and therefore, increase its chance of successful reform and sustainability (Prahalad & Ramaswamy, 2004) by applying value co-creation processes.

The process of value co-creation provides a road map for collaboration and a focus to uncover interactions that are most relevant to this case study. Value co-creation provides the collaborative space in which interactions that reveal leadership strategy employed by agents during a change event can be studied. Exploring CLT in previous sections has revealed enabling leadership actions that occur in spaces of possibility or in adaptive spaces. The exploration of VCC provides a focus to uncover these enabling leadership actions.

In higher education, the application of VCC has typically been between the student and the institute. But at a micro level, VCC occurs in the space between two people, the space in which the interaction is taking place. VCC provides a mechanism to engage participants in the blended learning framework project in a way that eliminates any requirement that participants understand complexity or CLT. Creating this adaptive space through VCC, collaborative practices allow enabling leadership actions to be observed and uncover signals that facilitate change or even large-scale educational reform.

For the purposes of this study, value co-creation is the space that allows for two or more agents to collaborate for the purpose of creating processes or artefacts that support mutually beneficial change in educational practice (Dollinger, 2018). Zimmerman points out that resources are neutral until humankind decides what to do with them (1951). Therefore, each interaction is neutral until humans reflect and assign value to it. Value co-creation is truly a paradigm shift that has been adopted quickly by business firms across the globe, enabled by our networked world, making it an example of theory informing practice in a timely manner and an appropriate choice for this case study.

Value Co-Production. Value co-creation (VCC) has two dimensions: value co-production and value-in-use (ViU). According to the literature review by Ranjan and Read (2016), three dimensions of value co-production were identified: knowledge sharing, equity, and interaction. It is significant to note that the use and definition of interaction in VCC aligns with the thematic construct of interaction that shapes this research.

Knowledge sharing integrates perspectives and activates skills which help to address dynamic concerns in such a way that this collaborative effort co-creates value (Fisher & Smith, 2011). Fisher and Smith (2011) also uncovered how chaotic it can be to relinquish control which is essential in the value co-production process. There is still much research to be completed to unravel the intricacy, complexity, and difficulty that is inherently involved with the dialogue, interactivity and collaboration of a value co-production process (Fisher & Smith, 2011, p. 326).

Equity within value co-production has two perspectives. Equity from the perspective of the firm is its willingness to share control and to give over to consumer empowerment (Bolton & Saxena-Iyer, 2009; Fisher & Smith, 2011; Hoyer et al., 2010; Ranjan & Read, 2016). From the perspective of the consumer, or in education, the student, equity is the desire to contribute to the co-creation activity.

The third and final dimension, interaction, "is the primary interface between the parties undertaking co-production" (Ranjan & Read, 2016, p. 293). Interaction manifests itself through dialogue (Payne et al., 2008, p. 93). Dialogue is an intricate exchange of thoughts, experiences, and opinions which all support cognitive, emotional, and action-based learning thereby increasing the possibility of generating innovative and sustainable solutions (Aarikka-Stenroos & Jaakkola, 2012). Interaction has a discursive nature and triggers social practice (Nambisan &

Baron, 2007; Vallaster & von Wallpach, 2012), solidifying it as a practical focus for this study and one that generated observable data that can be collected and analyzed.

This study used the space of possibility to uncover the enactment, experience, and value that leadership strategy plays amongst and between individual agents during the co-construction and implementation of a blended learning framework project. According to Prahalad and Ramaswamy (2003), "the personal meaning derived from the co-creation experience is what determines the value to the individual" (p. 14). Although the authors were referring to the co-creation experience related to new product development, the statement is applicable in this polytechnic case study. Uncovering what value participants assigned to a particular action that took place during the interactions within the context of the blended learning project assisted in uncovering how leadership strategy influenced the successful progression of this education reform event.

Value in Use (ViU). Value in Use (ViU) is the "lived or joint reality of use and experience" (Ranjan & Read, 2016, p. 292). It has also been defined as "a customer's outcome, purpose or objective that is achieved through service" (Macdonald et al., 2011, p. 671). Although much research has been done around value co-production, the full value co-creation has not been realized until the product or service is used by the consumer (Sandström et al., 2008). The concept of ViU has many useful applications in higher education. For example, it provides a useful method for uncovering the longer-term impact that education has on a person's career goals. For the purposes of this case study, ViU was not fully exploited due to the short five-month timeline of the study.

To conclude the VCC literature review, value co-creation is a thematic construct for this study because it provides a window into furthering our knowledge and understanding of adaptive

space. Adaptive space is where one will be able to observe the interactions that are specific to enabling leadership. This is highlighted in Figure 2, which illustrates the conceptual framework applied in this embedded, single case study, nested within the layers of the naturalistic complex reality.

Interaction depends on having two willing individuals engage with each other. It is for this reason that individual action is discussed briefly in the next section before returning to a more thorough discussion of interaction to close the chapter.

Individual Level of Complexity

The nano level of complexity is the individual. In this study, individuals were staff members in various administrative, coordination or managerial roles that are either close to the delivery of applied education or are working within a support department further removed from the delivery of applied education like finance, technology systems or marketing. This variation in agents provided a valuable population for narratives to be collected that highlight the personalization within interactions yielding rich descriptions of the enactment, experience, and value of leadership. Before describing interaction in detail, the term action will be explained.

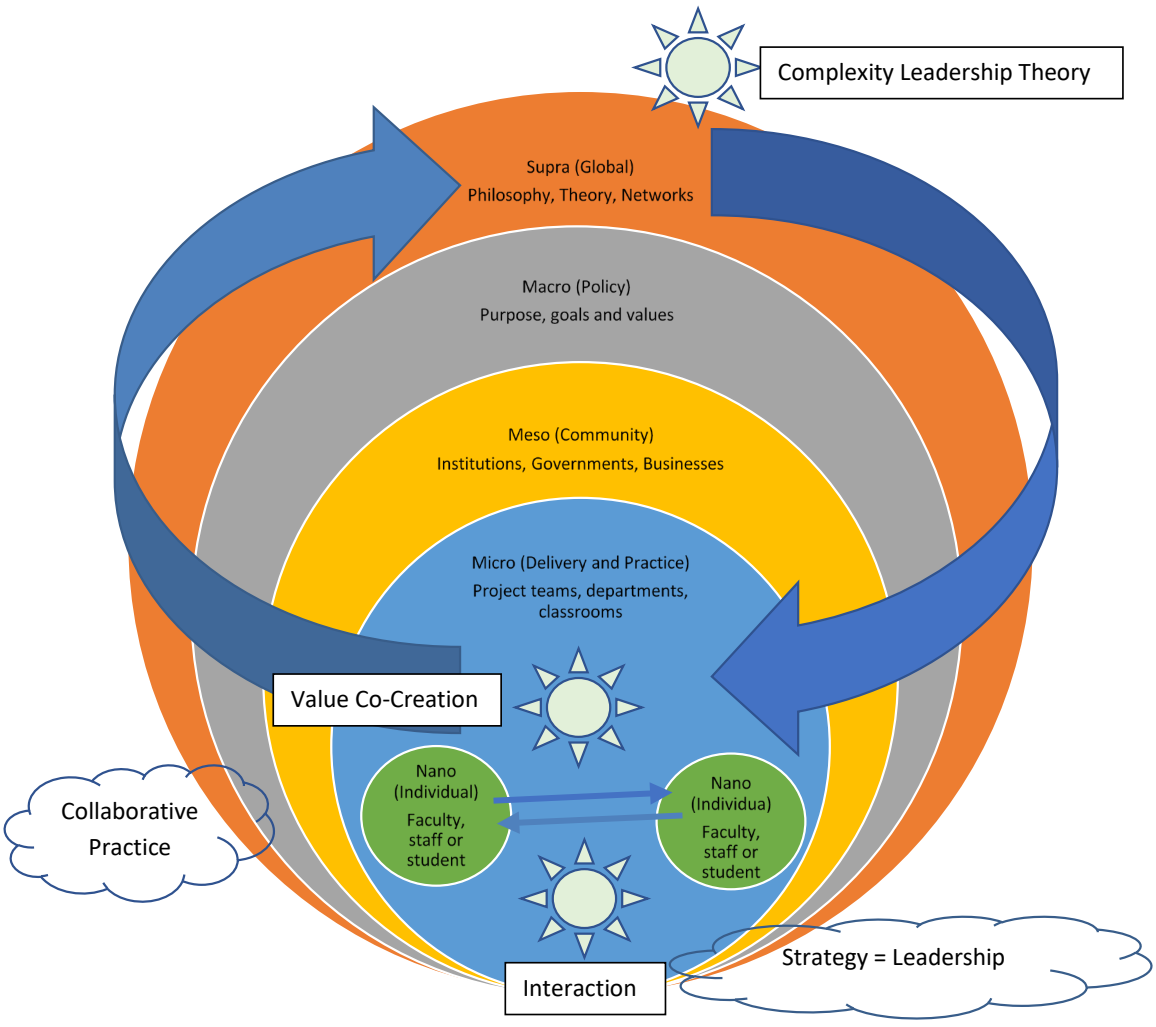
Action

Human action or strategy has three features, namely, intentionality, subjectivity, and uncertainty (Moroni & Cozzolino, 2019). Human action is a purposeful behavior of an agent undertaken with a specific intention of achieving a certain desired end state, which takes place in the present but with a future aim (Ikeda, 2012; Mises, 1963; Rothbard, 1962). This distinction is important because if desires could instantaneously be realized, the need to act would also be instantaneously removed. Because all action is interconnected, when human action becomes group action, it has the potential to give rise to emergent phenomena.

Human actions are subjective because they are the expression of our individual values, needs, and preferences (Moroni & Cozzolino, 2019). This means that all human strategy, including leadership, is also subjective. Educational environments have a diversity of individuals who have different ideas on how to educate others based on their own experiences of their own educational pasts. Similar to cities, higher educational institutions are places where conflicting lifestyles, interests, and values intermingle (Moroni & Cozzolino, 2019).

Figure 2

Conceptual Framework Within the Contextual Nest



The third feature, uncertainty, arises from the logic that the reason humans act in the first place, is that humans believe our actions will alter or interfere with the natural course of some event, but one has no way of knowing with certainty what effect our actions will have (Callahan, 2002; Kolowski, 1990; Langlois & Everett, 1992; Mises, 1963; Wubben, 1995).

Leadership is an example of an action or strategy that an agent chooses. Leadership is not a one-way action and is better described as an interaction.

Interaction

Interactions are a collection of actions that exhibit reciprocity and influence. More specifically, interaction is "reciprocal events that require at least two objects and two actions. Interactions occur when these objects and events mutually influence one another" (Wagner, 1994, p. 8). More recently, Juwah (2006) defined interaction as "dialogue or discourse or an event between two or more participants and objects that occurs synchronously and/or asynchronously mediated by response or feedback and interfaced by technology" (p. 1). This definition, which I adopted in my research, is very useful and highlights the contextual layers of complexity inherent in this case study.

As a concept in distance education, interaction has continued to evolve and increase in complexity, given that our understanding and knowledge of interaction increases through research. This study took place during the co-construction and implementation of a blended learning framework project and so it is important to compare and contrast the use of the term interaction in the pedagogical setting with its use in the leadership setting because in higher education, the settings cannot be separated in practice. Anderson (2003a) supports the fact that informal interaction also facilitates learning when he says, "all types of interactions should be

assessed by their contribution to the learning process" (Anderson, p. 3). I will begin with the pedagogical setting.

In the context of distance education, Moore (1989) identified three types of interactions: learner-instructor, learner-content, and learner-learner. Although other types have sprung up in the literature, like the investigation by Jung et al. (2002) of three types of interactions (academic, collaborative, and social interaction), they were merely new labels for the dimensions of interactions originally identified by Moore. Almost a decade later, Anderson and Garrison (1998) described three more types of interactions – teacher-teacher, teacher-content, and content-content. Based on these types of interaction, Anderson (2003a) developed an equivalency theorem for the post-industrial advancement of distance education that said as long as one of the three forms of interaction identified by Moore was present at a high level, then the other two could be minimized or even eliminated (p. 4). As simple as the theory is, it has utility in that it helps us envision new systems and structures, create something new, and be honest (Wilson, 1997). This theorem also bridges the pedagogical and leadership settings; both need to be given consideration to have a successful education system. Understanding modes of interaction and applying the equivalency theorem provides information or feedback that will shape the actions of the participants and the design of the blended learning framework project as decisions need to be made that also consider time, resources, and costs in balance with student success.

Anderson stated that "interaction has always been valued in education" (2003a, p. 2). This is also true in applied education. Anderson (2003b) states that "this interaction between and among teachers forms the basis of the learning community within formal education institutions." During an educational transaction or event, interactions function to aid in the development of meaningful learning (Sims, 1999) as well as to create the possibility for a learning community to

form (Lipman, 1991; Wenger-Trayner & Wenger-Trayner, 2015). These two functions of educational events align with the desired outcome sought out by the enabling leadership, to support change, outlined in an earlier section of this chapter. Generating rich descriptions of the six important practices that enabling leaders engage in (linking up, creating bridges, leveraging adaptive tension, influencing with tags and attractors, creating simple guidelines, and network closure) and uncovering their interplay with these two functions of interaction was a priority in the analysis of this case study. It was also very interesting to see how these functions were revealed in the voices of the participants during the interviews.

When using complexity theory to frame this research, it is important to discuss intentionality, emergence, and unpredictability in relation to interaction. Intentional actions result in unintentional outcomes because all actions are connected, and how other agents react to an action cannot be predicted (Holland, 1996). The complexity arising from many interactions can be referred to as a social environment (Holland, 1996). Although individual human action is intentional, the ongoing interactions, the remote side effects, and the chain reactions are neither intentional nor predictable (Moroni & Cozzolino, 2019). This is common inside a complex system and characterizes its dynamic nature.

Yilmaz and Karaoglan Yilmaz (2020) looked at whether leadership style did or did not impact self-regulated learning. Bligh et al. (2018) looked at the impact of leadership style on error learning. Somprach et al. (2017) looked at the impact of leadership style on increasing participation in professional learning communities (PLCs). The shortcomings common to each of these studies are that they are all looking for a causal connection between leadership and learning using a traditional leadership theory to inform their questions and their research design. The research studies are set during a time of equilibrium and they are using a reflective

questionnaire approach rather than attempting to study the phenomena in real time. All three studies acknowledged the importance of interactions but because they were looking for a causal connection, they glossed over the interactions, not digging in deep enough to give voice to the interaction or to explain the how.

Dyadic interaction, the unit of analysis of this case study, may also be considered employee voice. Employee voice is a change-oriented behavior whereby an individual makes a calculated decision on what, how, and how much information to communicate with the intention to better the collective and is considered key to leadership (DeRue et al., 2011; Detert & Burris, 2007). Bligh et al. (2018) acknowledged that employee voice is an area for future research consideration.

An interesting contribution to the leadership literature that this study makes is the concept of serious intellectual interaction. According to Somprach et al. (2017):

> Good principals stimulate serious intellectual interaction around issues of reform and improvement. Paradoxically, they relinquish power through democratic decision-making processes but exercise a strong leadership style in the articulation of organizational goals (Gaspar 2010). (p. 164)

Interaction as the Source of Complexity

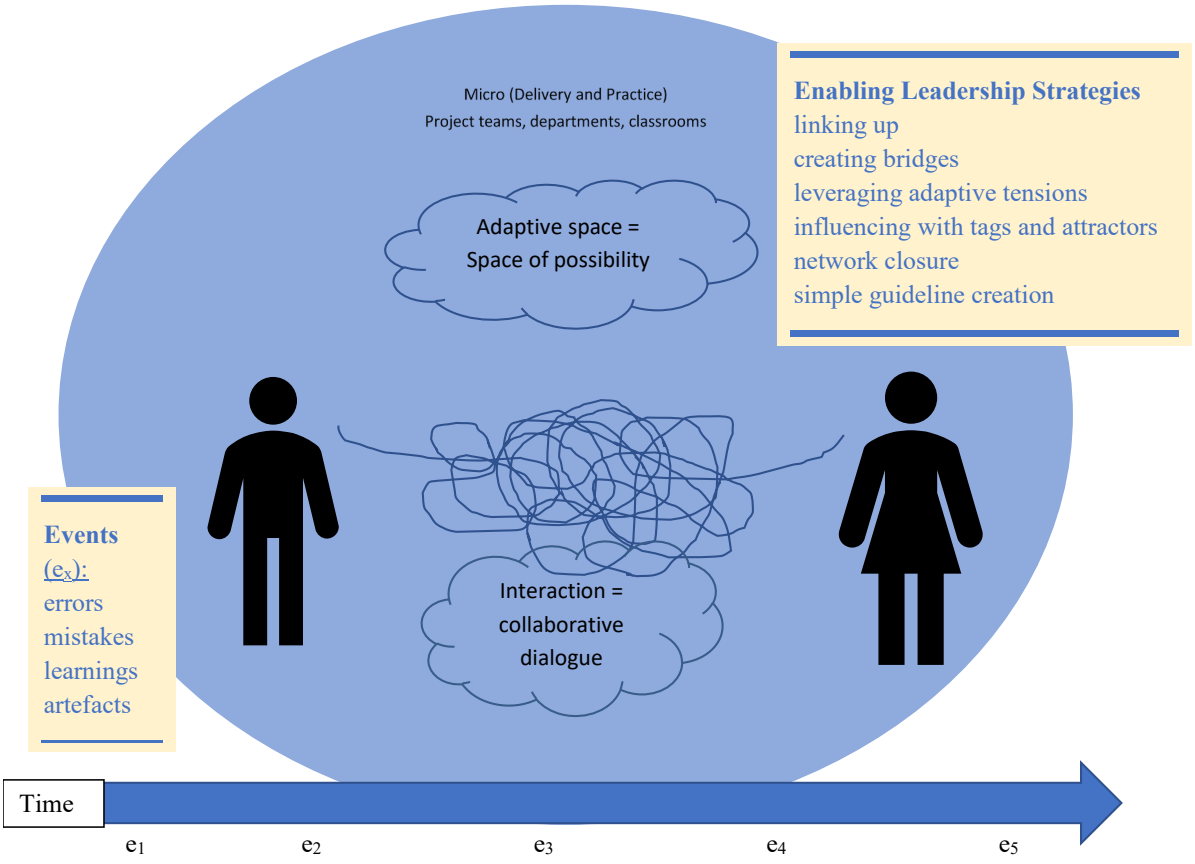
According to Drath (2001), people construct their reality through their interactions with thought, word, and action. Logically it follows that this is the starting point or the smallest unit of complexity that can be studied. The dyad is appropriate because self and others are not separable, rather they are coevolving (Bradbury & Lichtenstein, 2000, p. 551). Indeed, Lichtenstein et al. (2006) agree that in order to study this space between agents, researchers need to identify the interactions of interest and capture these events in a systematic way (p. 6). In a

study where the context was an entrepreneurial venture, Lichtenstein, Dooley, and Lumpkin (2006) were able to identify a specific change point, or nexus, that was able to explain all the interdependent aspects of an emergence event over time. Others have also used narrative techniques to assist in studying organizational emergence in the context of a city's musical theatres over time (Chiles et al., 2004). Both examples highlight the gap that exists and neither study provided an in-depth description of the how. This study starts to fill in that gap by focusing on specific dyadic interactions and bestowing voice through rich description.

Interaction, or the act of leadership, occurs in the space between the players and belongs to no one (Baltaci & Balci, 2017; Lichtenstein & Plowman, 2009). Between interactions and within the same interaction players can take on many different roles. These dynamic interactions allow for freer flow of ideas and more open sharing, which eliminates or minimizes power dynamics that often stifle innovation. Dyadic interaction is the smallest unit of measure to describe how leadership is enacted, experienced, and valued. The application of a CLT lens to leadership strategy by researching dyadic interaction has expanded our understanding of the micro level of organizational behavior in higher education institutions, specifically polytechnics. Figure 3 magnifies the interaction within the conceptual framework. The process of leadership unfolds, as interactions through collaborative dialogue generate events (errors, mistakes, learnings, artefacts). These events have been woven together through interviews to form value-creation stories that will describe how leadership is enacted, experienced and valued by the participants taking part in a blended learning framework project at a Canadian polytechnic institution.

Figure 3

Conceptual Framework: Magnification on Interaction



A study completed by Bäcklander (2018) was able to demonstrate that organizational outcomes emerge from interactions and provides the recommendation that leaders need to take an interest in how their team members interact because influencing how people interact will influence organizational outcomes. She used a descriptive case study methodology to interview 16 agile coaches who are practicing enabling leadership, a component of CLT at Spotify, a streaming music service company. Taking a relational view focusing on quality of interactions, being more process-oriented, this study revealed that in dynamic environments it is best to lead with simple rules and allow them to be interpreted locally, and anew for each situation

(Bäcklander, 2018, p. 55). Indeed, she calls for future research that focuses on the interaction between team members in order to illuminate how they accomplish adaptive space (p. 56).

This knowledge changes our notion of leadership. It shifts the paradigm away from hubris associated with leadership being the center of command and control, towards a humbler awareness of others and how their interactions playing out over time can influence an entire system to achieve the impossible. Agents employ strategy and adapt their strategy to improve performance (Axelrod & Cohen, 2000; Johnson, 2009). It lays the foundation to value diversity, inclusion, sustainability, collaboration, and innovation.

Human Interaction (Verbal and Intellectual)

A study completed by Trognon et al. (2011) at the University of Nancy using the Wason's selection task revealed the effectiveness of verbal interaction in problem-solving. Wason's selection task is an almost 60-year-old problem used to study deductive reasoning in psychology. Its longevity may be attributed to the very low success rate of only 4% of subjects finding the correct solution. The authors altered the context of the study in order to reveal what discursive-sociopsychological cognitive processes were at play during an interactive execution of the selection task. What they found was that in three of the four successful dyads, the correct solution was arrived at through dyadic interaction as neither member had found the correct answer on their own.

Dialogue is uniquely human. Trognon et al. (2011) revealed that the dialogue exchanges were "diversified and highly interweaved" expressed as feedback, explanatory dialogue, and disputes. The important role that dialogue plays is exemplified in the interactions of one particular participant who, clearly confused about the task, was still able to influence the process immensely through dialogue, leading the conversation, and the cognitive processing towards the

correct solution. This new intertwining of spaces, and inner thoughts with external dialogue is called "learning in action" (Trognon & Batt, 2010). Learning in action is both the distributed cognitive skills actualized during the interaction as well as the individual cognitive skills that are not shared at all or shared to varying degrees (Trognon et al., 2011). This concept of "learning in action" is aligned with CLT in that the individuals within the dyad contribute, not aligned to any roles or division of labor but rather in a more spontaneous and fluid manner, were able to use the space between them to epitomize learning and leadership. This case study focused on interactions, in that it focused on the space between two people, the space of possibility, also called adaptive space, in order to further our understanding of enabling leadership and the personalization and uniqueness inherent in this human interaction.

Undesirable Outcomes From Interactions Inherent in the experience of leadership is the possibility of errors or making mistakes. The term error can be used interchangeably with mistake to refer to actions and decisions that lead to an avoidable, undesirable or less-than-expected outcome (Zhao & Olivera, 2006). Failure is a negative or undesired outcome, which may or may not have been due to any error or mistake, and should, therefore, spur a purposeful search for the reason it occurred (Bligh et al., 2018, p. 119). The authors go on to state that:

> In sum, error learning is a complex and multi-phased process, and one in which we argue is increasingly dependent on interactions with others in modern organizations. In interdependent work environments, the nature of errors is likely to be one in which the root causes, development of understanding about action–outcome relationships, and modification or improvement of processes and behaviors is *unlikely* to be accomplished alone by a single employee. (p. 121)

Errors are a probable outcome of any interaction and the participant interviews revealed errors that had occurred during the blended learning project and the learnings generated from these errors. Errors are an important element for generative potential, as highlighted in an article co-authored by a student and Professor from the University of Wisconsin-Madison, a racially diverse community (Green & Wood, 2018). The racial undertone of the n-word in a reading performed during class triggered a critical sequence of interactions that transformed everyone involved. This example illustrates the generative potential that errors possess at the dyadic level to impact at the collective level in a large-scale change event. Within each of those interactions there was vast learning and leadership occurring in the space between individuals.

The above article also exemplifies how truly fluid leadership is and that leadership occurs within every nano interaction regardless of title, role or position. Indeed, revealing leadership in the most unlikely places may provide indicators for larger-scale reform events. Systems thinking has the view that leadership is required at every level of an organization in order to sustain deep change (Senge, 1990a). The leadership trajectory of each student who experienced this may be forever altered and Wisconsin-Madison University has been irrevocably changed.

Desirable Outcomes From Interactions The literature suggests that desirable outcomes from interactions such as innovation, sustainable practices, and inclusive policy enactment, are not achieved in a straight line. It is for this very reason that one-to-one interactions are the unit of analysis in this embedded single case design. Generating rich descriptions of enabling leadership in the adaptive space has uncovered a sequence of interactions that leaders can interpret and apply in their own contextual settings to inform the emergence of education reform.

To understand where the future of education is going, it is necessary to understand the architecture and structure of knowledge (Siemens, 2014). Because a complex adaptive system

conserves, processes, and creates knowledge (Cleveland, 1994), CLT provides a framework for preparing leaders for the future of applied education. As educators, we are also leaders - people who are responsible for making positive differences in our schools, our communities, and our world. CLT is well suited for framing the practical application of leadership for the purposes of supporting learning and innovation (Rosenhead et al., 2019).

Both learning and innovation have been identified as desirable outcomes in higher education (Beaudoin, 2015; Senge, 1990a; Siemens, 2014). Innovation is vital to the successful performance, even the survival of an organization (Anderson et al., 2014, p. 1297). This certainly includes education. Innovation is the intentional implementation of ideas to make a product or improve a process (Anderson et al., 2014; Thayer et al., 2018). Innovation is itself emergent and complex (Anderson et al., 2014).

Summary of Chapter Two

This comprehensive literature review attempted to construct a complete picture of complexity. A conceptual framework is "informed by personal experience, existing theory and prior research, exploratory and pilot research, thought experiments and preliminary data and conclusions" (Cohen et al., 2011, p. 117). From the philosophical supra level operating at a global scale, down to the individual person, an agent for change and possibility, this chapter outlined the conceptual framework for this case study. A visual of this conceptual framework is presented from two viewpoints. Figure 2 presents the conceptual framework still within its contextual nest. Figure 3 presents the conceptual framework from the micro level view, magnifying the interaction between two people, the unit of analysis in this embedded single case.

The following chapter outlines the methodology deployed in this case study.

Chapter 3: Methodology

Problems in education are to be "*embraced and explored* rather than solved".

- **Oliver & Conole**, 2003, p. 393 -

My life experiences and readings have shaped an intersubjective ontological position and a relational epistemological position. That is to say that the interchange of thoughts and feelings to make the world more inclusive is a guiding principle for my research and leadership practice. My current position as the Dean of a polytechnic in Canada, along with being a doctoral student, have provided me a unique opportunity to enact this principle through this research.

A pragmatic research paradigm has anchored an interpretivist methodology that employs value-creation stories as a tool to give employee voice to the enactment, experience, and value of leadership strategy during the co-construction and implementation of a blended learning framework project in a Canadian polytechnic. The interviewee participants included members who actively contribute to the delivery of applied education and also members who support the delivery of applied education through a support department such as finance, human resources, technology systems, and marketing. Uncovering the personalization inherent in leadership strategy through value-creation stories has provided rich qualitative data to inform theory and practice at a level that has not been extensively explored using a CLT lens.

This chapter presents the expanded research questions and explains why the case study methodology was chosen. This is followed by the details of the research study including unit of analysis, data generation, and data analysis activities. Reflexivity, validity, and reliability are discussed before ethical considerations are outlined. The timeline of the study is also documented.

Research Purpose and Questions

As stated in the introductory Chapter One, the professional conundrum, the problem being explored in this study was how a single agent employs leadership strategy through interactions with other agents to positively or negatively contribute to the success of educational reform. Chapter two explored the complexity leadership model proposed by Uhl-Bien and Arena (2017) in great detail as the data generated in this case study has been compared to this model in order to add credence to the model or possibly to refute any of its components.

The central question guiding this study was: how is leadership strategy enacted, experienced, and valued by agents during the interactions that take place in a value co-creation process, like the co-construction and implementation of a blended learning framework project at a polytechnic in Canada? In order to further guide the data generation and analysis, the following sub-questions were developed:

1. How do the participants describe the interactions they have experienced during the value co-creation process, i.e., the co-construction and implementation of the blended learning framework project at a polytechnic in Canada?
2. How similar or different are the participants' descriptions of their interactions to the six enabling leadership actions identified by Uhl-Bien and Arena (2017): linking up, creating bridges, leveraging adaptive tensions, influencing with tags and attractors, creating simple guidelines, and network closure?
3. How do the participants, through interactions, accomplish creating an adaptive space?

Interpretivist Methodology

In order to answer the questions posed, this study required inductive reasoning to study behavior in a natural setting, which is true of qualitative methods (Lincoln & Denzin, 2003).

Qualitative methods sit within the interpretivist paradigm and in sharp contrast to quantitative methods, assume that the phenomena under study cannot be measured, and instead is better explained through the interactions among individuals (Lincoln & Denzin, 2003). Qualitative researchers seek to understand and interpret social interactions with a view of producing specialized findings grounded in reality, making them less generalizable to other settings (Lodico et al., 2010). Case study, however, uses theory to draw analytic generalizations (Yin, 2014, p. 40). Yin (2014) goes on to state that "the generalizations, principles, or lessons learned from a case study may potentially apply to a variety of situations, far beyond any strict definition of the hypothetical population of "like-cases" represented by the original case" (p. 41).

Naturalistic approaches, like case studies, oppose positivism because they reject the belief that human interaction is governed by rules, laws or even regularity (Cohen et al., 2011). There is a consensus that human interaction "can only be understood by the researcher sharing their frame of reference" (p. 15). These study participants, in their own voices, have defined the social reality this study aimed to reveal (Beck, 1979).

The questions were best explored through an interpretivist lens because I was determined to reveal the specific human meaning and understandings that were unique to this situation and context so that it can be used by others to compare to what may occur in another time or place (Cohen et al., 2011). Interpretivist approaches focus on future-oriented action and the shared experience with a focus on the participant, not the researcher, in an attempt to understand the subjective world of human experience (Cohen et al., 2011), so did this doctoral research.

Interpretive Qualitative Case Study

This case study used an interpretive research methodology. According to Cohen et al. (2011) "a case study provides a unique example of real people in real situations, enabling the

reader to understand ideas more clearly than simply by presenting them with abstract theories or principles" (p. 289). Case studies are one way to "improve the quality of conceptualization and theoretical development" (Minnis, 1985, p. 189) in a given field. The case study "investigates a contemporary phenomenon in depth and within its real-life context" (Yin, 2009, p. 18) and will "assist readers in the construction of knowledge" (Stake, 1998, p. 95). Case studies have the distinguishing feature of operating on holism rather than reductionism (Verschuren, 2003, p. 124). The case study methodology "reports the real-life, complex dynamic and unfolding interactions of events, human relationships and other factors in a unique instance" (Cohen et al., 2011, p. 289). Sigglekow (2007) also argued that single case studies give researchers the ability to richly describe the existence of the phenomenon that is under study.

There are two broad types of case studies: intrinsic and instrumental (Stake, 1995). An instrumental case study is appropriate when the research purpose is meant to go beyond the understanding of the individual case (Stake, 2006, p. 6). This is in contrast to an intrinsic case study where the research purpose is the case itself. The reported case study is instrumental because the data generated has helped to further refine the Complexity Leadership Model developed by Uhl-Bien and Arena (2018), specifically enabling leadership practices.

There are many examples of case studies having been used for explanatory research and exploratory research in education (Yin, 2009). The difference between explanatory and exploratory is significant enough to mention. Explanatory case studies endeavor to explain an event based on some cause-and-effect relationship that is not well understood (Yin, 2003b). Exploratory case studies set out to describe an event which is not well understood and no set of outcomes yet exists (Yin, 2003b). This case study was neither exploratory nor explanatory. This

embedded single case was a descriptive case study because it successfully generated rich descriptions of enabling leadership, which was a descriptive effort (Yin, 2014).

A case study is appropriate when 'how' or 'why' questions are being asked, especially when the study is about a contemporary phenomenon in real-world context and the researcher has little to no control over the events (Yin, 2003a). This case study was designed to focus on how questions exclusively create rich descriptions of the interactions during a value co-creation process and not pre-suppose any why to the actions observed. This was a tactic to maintain focus and an attempt to keep bias at bay. Creswell (2009) defined case study as a strategy of inquiry in which the researcher explores in-depth a program, event, activity or process of one or more participants. Merriam (2009) describes case studies as an "intensive, holistic description and analysis of a single instance, phenomenon, or social unit" (p. 27). The data generation techniques used in this case study included participant completed aspirational narratives and interviews, which will be discussed in the upcoming data generation section of this chapter.

Case Study Research Design

Case study research allows researchers to study behavior in natural settings and is inductive in nature, allowing for the specific observations to inform theory development of the specific phenomenon that is under study (Lincoln & Denzin, 2003). This study took place in the natural environment of a Canadian polytechnic institution. Semi-structured interviews were used to generate thick descriptions of enabling leadership strategy enacted and experienced in the participant's own words. In addition to being the researcher, I am also a leader, deeply embedded in the structures and systems that guide the applied education the institution delivers. According to McKenney and Reeves (2012) "to understand the problem, it can be extremely

important to see it in action" (p. 185), and as the Dean at this Canadian polytechnic, I am in a unique position to be intimately connected to the problem.

The classification of researcher role I took on was participant-as-observer because I am a member of the group but was completely transparent with my role as researcher (Gold, 1958). Gold goes on to say that this does come with some risks, such as lacking the necessary objectivity to observe reliably or participants not sharing fully during the interviews. These risks, as well as others, will be addressed in the following sub-sections of this research design section.

Seven elements in the research design for this case study were given serious consideration and each is documented in the following sub-sections. These include bounding the case, data generation, data analysis, reflexivity, validity and reliability, ethical considerations, and the timeline for the study.

Bounding the Case

This case study asked how questions about contemporary events, which I had no control over and arose out of my desire to understand complex social phenomena whose boundaries with the context it is occurring in, are not clearly evident. According to Yin (1993; 2014), these are exactly the conditions that made case study an appropriate research method. The contextual layers of this case were introduced in Chapter One and the polytechnic institution as a CAS was established in Chapter Two. This was explained in careful detail because the context ended up containing important explanatory variables about the phenomenon.

Involving practitioners enhances the validity of the results (Beetham & Conole, 2001; Beetham, et al., 2001). The interactions of these leaders within the polytechnic generated rich

data for analysis. Choosing an embedded single case design allowed for every one-to-one interaction to be included as a possible unit of analysis in this dissertation research.

The first step in the interview process was to recruit and screen participants. Qualitative interviews seek out individuals who are uniquely qualified to provide rich information because they are an expert in the area of interest or they are privileged to witness or participate in a specific event (Patton, 2002; Weiss, 2008).

Once ethics approval had been obtained from Athabasca University in August 2021, and also from the Canadian polytechnic in early October 2021, an invitation letter was emailed to all members of the Canadian polytechnic Management Council, who then cascaded the invitation to participate through all their direct reports. Participants were not eligible for the study if they had any direct or indirect reporting lines to me.

Participants were then selected to ensure representation from each of the following work classifications:

1. administrators and managers that directly support applied education delivery, and
2. administrators and managers that indirectly support applied education delivery.

In a qualitative method, such as a case study, the group of participants is meant to represent themselves and their own uniqueness (Cohen et al., 2011). The case study does not represent a sample (Yin, 2014, p. 21). The study did not exclude anyone based on different levels of educational attainment (i.e., bachelor's degree, master's degree, and PhD). The size of the group chosen to participate was about the fitness for purpose and so the study aimed to select eight to 12 participants. I was able to recruit 14 participants. One participant did withdraw, and so this left 13 as the total number of participants. As stated, there was one exclusion criterion applied to the recruitment and selection of participants. If the participant was employed in a role

that had a direct or indirect reporting line to my position, they were excluded from participating in the study. The reporting relationship could have been seen as a potential conflict of interest; it could have impacted the anonymity of the participant and clouded the objectivity of the researcher.

Data Generation

Data generation is akin to data collection, but the significant difference is that in data generation, the researcher is regarded as a co-producer of the data as the direct result of the interactions between researcher and participants (Mason, 1996, p. 36). There were two sources of data that this study generated: semi-structured participant interviews and participant completed aspirational narratives as seen in Table 1. Each of these will be discussed in the following sub-sections.

Semi-Structured Participant Interviews Qualitative interviews are a method of data generation (Seale, 2018, p. 220). The qualitative interviews conducted for this study were semi-structured using the aspirational narratives that were collected from each participant early in the study to explore specific interactions in more detail. Interview questions were formulated using indicators of value creation as outlined by Wenger et al. (2011) in their promoting and assessing value creation framework. A semi-structured approach is supported by Yin (2009) who states that interviews are intended to be "guided conversations rather than structured queries" (p. 106). Due to safety restrictions around COVID-19 protocols, these interviews all took place in the virtual meeting platform Zoom. All participants consented to both video and audio recording of each interview. Due to a technical glitch, the transcription feature was not enabled and so did not generate a document. However, Otter, a transcription software was subsequently utilized to generate the transcript in a .txt format based on the interview recordings. This file was uploaded

into NVivo12 where I attempted to learn and utilize the software to assist me in coding. After quite a bit of effort and time, I decided to pivot my approach and complete the coding process manually. Member validation was utilized and discussed at length in the upcoming internal validity section.

There was one semi-structured interview conducted for each participant. During analysis, I did not require any clarification or further exploration of details and so did not use any other email follow-up, other than the member validation of the transcript. The aspirational narratives were collected from each participant early in the study and were used to frame specific questions asked during the interview. The aspirational narrative questionnaire template is in Appendix C and was only completed once by each participant. The aspirational narrative was very helpful in triangulating data and construct validity. The relationship between the data generation, collection instruments, data format, and data analysis for this study is summarized in Table 1.

Though I had planned to complete observations in the naturalistic setting, gather documents and artefacts such as project plans, project reports, web pages, e-mails, meeting minutes, press releases, related institutional planning documents, and related institutional reports that were co-created or generated as a direct result of the blended learning framework project, the fact that the work environment had transitioned to occur completely remotely, did not support that collection of data. Though participants did refer to documentation during the interviews, I did not collect or ask to see any of these artefacts. They were, though, referred to during the semi-structured interview dialogic exchange to clarify descriptions of interactions during the interview process. Table 2 outlines the typical indicators of interactions that were used in this study to organize and analyze the qualitative data generated.

Table 1

Relationship Between the Data Generation and the Data Analysis in this Case Study

Data Generation Activities (Inputs)	Collection Instruments	Format of Data	Participants	Organization and Analysis Tools	Reporting Outputs
Participant completed aspirational narratives	Aspirational value narrative	Word files	Individual submissions (13)	Promoting and assessing value creation framework (Wenger et al., 2011)	Value creation stories inside a descriptive case study
Semi-structured participant interviews	Personal value narrative (grounded)	Audio & video Zoom recordings & transcripts	Individual interviews (13)	Thematic analysis	
Researcher journaling	Reflexivity management	Word files	Researcher (1)		

The use of researcher journaling will be discussed in detail under the reflexivity section upcoming in this chapter.

Data Analysis

Data reduction is a key element in qualitative analysis (Cohen et al., 2011, p. 559). The interpretive data analysis involves thematic analysis to reveal patterns, identify tags, and extrapolate meaning from the data generated that expands our understanding of leadership strategy and illuminates new elements within the interactions during a value co-creation process. Because the focus of this study was to expand our knowledge in how leadership strategy is enacted, experienced, and valued, the analysis was focused on providing a rich, complex account of data and capturing the core elements of enabling leadership. The following sub-sections detail

the application of the framework for promoting and assessing value creation developed by Wenger et al. (2011) that was used to organize both the data collection and the analysis as it unfolded in this case study.

Table 2

Indicators for Assessing Interaction in Each of the Five

Cycle	Sources of data for assessing interactions
Cycle one: immediate value of the interactions	• Brings experience of past practice into the learning space • Debates on important issues • Feedback on quality of responses to questions
Cycle two: potential value of the knowledge capital	• Brings up difficult problems or past failures • Interest in learning and leadership activities • Self-reports on confidence, changes in perspective, and level of trust
Cycle three: applied value and changes in practice	• Collaborative arrangements • Leverages connections in the accomplishment of tasks • Implementation of advice/solutions/insights
Cycle four: realized value through performance improvement	• Feedback • Achievements • Increased interest in knowledge itself
Cycle five: reframing value and redefining success	• Different conversations with stakeholders • Involvement of new stakeholders • New sets of expectations

Note. Adapted with permission from Wenger et al., 2011, pp. 25-31

Framework for Promoting and Assessing Value Creation. Value co-creation is a concept that has moved business away from controlling consumers and towards a recognition that consumers are very capable of independently assessing quality and value; businesses need to cultivate this diversity and creativity in consumers (Fisher & Smith, 2011; Macdonald et al., 2011). This same premise extends to polytechnic education and its adult learners. Value co-creation requires two-way dialogue in order to share critical information and ensure that the value proposition is crafted jointly (Ballantyne & Varey, 2006; Prahalad & Ramaswamy, 2004). This same approach has been applied to higher education. When considering pedagogical trends towards a more inclusive classroom and students having a more active role in deciding what they want to learn, it makes sense for leaders in higher education to model this approach with their staff and faculty. This study has revealed that value co-creation processes have proven valuable application in the co-construction and implementation of this blended learning framework project.

For decades, managers have been taught to reduce complexity, to manage their portfolio in segments in order to target outcomes, and focus efforts. My experiences, and the findings from this study, indicate that history has come to a point where complexity can no longer be ignored, rather it needs to be embraced. Focusing on meaningful, highly valued interactions has provided new insights for complexity theory, focusing on quality over quantity. By quieting the noise and not ignoring it, this study has revealed new knowledge to inform practice. This study provided evidence that confirms that collaboration, innovation, and competence originate with the individual, just as value co-creation acknowledged (Fisher & Smith, 2011). This study successfully applied the framework for promoting and assessing value creation developed by Wenger et al. (2011) to generate thick descriptions to uncover the multilayered complexity of

reality and the lived experience of these participants (Cohen et al., 2011). The framework for promoting and assessing value creation captures participant narratives around the interactions that take place within the adaptive space during the value co-creation process, the blended learning framework project. This framework has been utilized in this study to organize and analyze qualitative data that evidences enabling leadership actions found in the Uhl-Bien and Arena (2017) complexity leadership model discussed in Chapter Two. The framework for promoting and assessing value creation in communities and networks provided the method for data analysis as well as the method for data generation and organization (Wenger et al., 2011). The Wenger et al. (2011) framework provides many examples of how to triangulate different data collections in order to provide evidence that an indicator of value has been met. The outcome of the application of this framework, value-creation stories, is discussed in the next section.

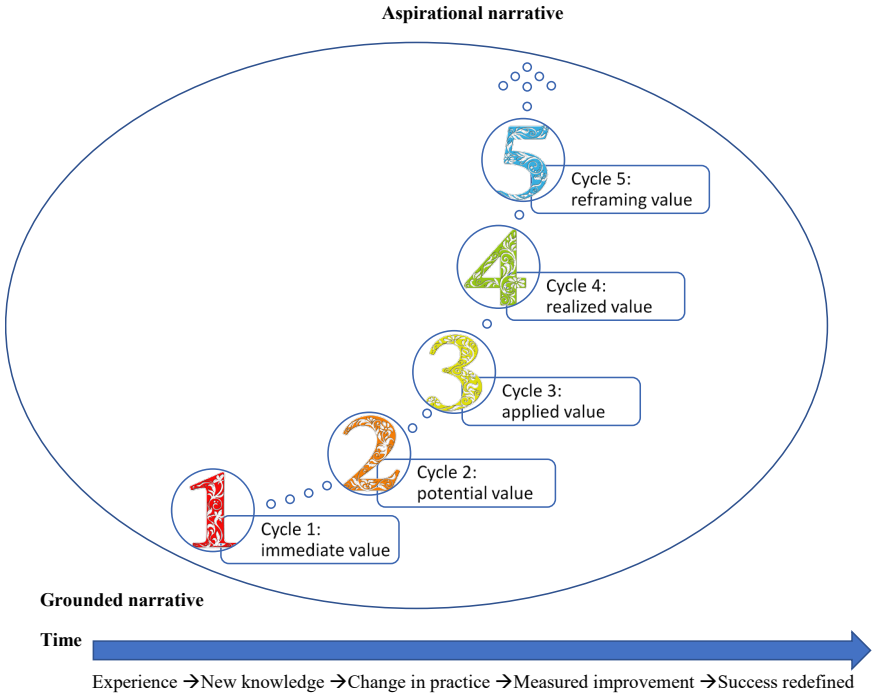
Value-Creation Stories. A value-creation story is the outcome of the application of the framework created by Wenger et al. (2011). A value-creation story has a standard format with five cycles. Cycle one begins with an event or activity, a specific interaction, along with the initial assessment from the perspective of the participant (the storyteller) on how productive the interaction was. Cycle two highlights the resource or outcome, such as a response in the form of advice or a follow-up inquiry. This was most often dialogue between two individuals clarifying a change in procedure or establishing a whole new relationship that came from a previous interaction. Cycle three describes how the resources from cycle two are used by the storyteller and what effects it has had. Cycle four links back to a change in practice, beliefs or understanding of the project itself, a process or a person. Cycle five is a personal reflection of

the project. The personal reflection did not result in reframing the entire initial interaction that spurred the story to begin with, indicating transformation or reform, as often as I had expected.

During the co-construction and implementation of this blended learning framework project, there were many interactions occurring, making it a rich data collection opportunity. It was not difficult to generate data on all five cycles of the value-creation story. Wenger et al. (2011) acknowledged the possibility that it could prove difficult and so the framework included how a value-creation story may be cropped and how proxies can be used at either end (p. 63). I did not have to crop or use proxies. All five cycles are depicted in Figure 4. Also, within the framework for promoting and assessing value creation is a description of ground narratives and aspirational narratives (Wenger et al., 2011).

Figure 4

Five Cycles of Value Creation



Note. Adapted with permission from Wenger et al., 2011

The value-creation stories template that I used to generate semi-structured interviews can be found in Appendix B. The aspirational narrative template that the participants filled in can be found in Appendix C. The ground narrative includes the everyday life of the community of practice, the events of interaction that are already happening, the experiences individuals have, and the roles people play (Wenger et al., 2011). Aspirational narratives paint a picture of expectations, what a community is trying to achieve, and what they want to evolve to be (Wenger et al., 2011). This gap between ground and aspirational narratives aligns with what Senge (1990a, 1990b) refers to as creative tension and what Uhl-Bien and Arena refer to as adaptive space. This is why this framework by Wenger et al. (2011) has been chosen to organize and analyze the data generated. It provided the emphasis required to study interactions in the adaptive space and illuminate how leadership strategy is enacted. By collecting the aspirational narratives early in the study, it provided a framework to anticipate emergence. The following sub-section details thematic analysis.

Thematic Analysis According to Vaismoradi and Snelgrove (2019), thematic analysis has similarities and differences with qualitative content analysis. It is similar to qualitative content analysis in that the process is a context-based analytic examination of narrative materials that is person-centered with an overall emphasis on new insights into a phenomenon. Both forms of analysis contain creativity in their data collection and follow a non-linear analysis process. The authors go on to state that the differences are that qualitative content analysis provides an output that is a simple report of common trends in the data that risks producing only surface meaning. In contrast, the output of thematic analysis is a higher level of interpretation than description through the application of purely qualitative process. The questions in this study are

how-questions and require thick descriptions that are rich accounts of the data, making thematic analysis the appropriate approach.

According to Braun and Clarke (2006), themes or patterns are the outputs of thematic analysis. Vaismoradi and Snelgrove (2019) define theme "as the subjective meaning and cultural-contextual message of data" (p. 2). Theme development is more interpretative than descriptive, as well as more complex and time-consuming in comparison to the formation of categories that underlies content analysis (Bengtsson, 2016; Connelly & Peltzer, 2016). Braun and Clarke (2006) define thematic analysis as "a method of identifying, analyzing and reporting patterns, or themes within data" (p. 79).

When conducting thematic analysis, there are several explicit decisions that the researcher needs to make before data collection begins and revisited throughout the analysis process. According to Braun and Clarke (2006) these include:

1. What counts as a pattern/theme (flexibility in defining prevalence)
2. A rich description of the data set, or a detailed account of one particular aspect
3. Inductive versus theoretical thematic analysis
4. Semantic or latent themes
5. Epistemology: essentialist/realist versus constructionist thematic analysis
6. The many questions of qualitative research (pp. 81-86)

Decisions regarding points one and two were made as I started to familiarize myself with the data. Regarding point three, a thorough examination of the literature had already occurred to narrow the research focus and so this study employed theoretical thematic analysis. In this study, the Uhl-Bien and Arena (2017) model for Complexity Leadership Theory was used as a template to compare the empirical results derived from this study with descriptions of the six

specific actions associated with enabling leadership. The transcripts of the semi-structured interviews were coded, categorized, and placed in manageable and comprehensible groups (Cohen et al., 2011) to demonstrate similarities and differences with the existing actions Uhl-Bien and Arena (2017) documented for enabling leadership. The indicators of interaction in each cycle of the promoting and assessing value framework by Wenger et al. (2011) helped to organize the volume of qualitative data that was generated.

As intended, I conducted the thematic analysis at the latent level to start to identify and examine the underlying ideas, assumptions and even ideologies that may be informing the semantic content of the data (Braun & Clarke, 2006, p. 84). According to Braun and Clarke (2006) there are six recursive phases of thematic analysis:

1. Familiarizing yourself with your data
2. Generating initial codes
3. Searching for themes
4. Defining and naming themes
5. Producing the report (p. 87)

These phases were useful landmarks to guide me in progressing an insightful analysis.

Reflexivity

Reflexivity is important to avoid as much researcher bias as humanly possible (Cohen et al., 2011). Reflexivity refers to the capacity of the researcher to reflect on their own actions and values during the entire research process from data generation and analysis, as well as during the compiling of the final write-up (Seale, 2018, p. 606). Specifically, reflexivity entails reflection on social, intersubjective processes and supports better contextualization of the encounters (Berger, 2015; Ortlipp, 2008). Because the interview is so flexible and allows for the participant

unique demographic qualities to influence the interaction and the interpretation of the data generated, I had to engage in critical self-scrutiny regarding my role in the interaction through this process of reflexivity (Cohen et al., 2011; Holland & Ramazanoglu, 1994). Subjectivity, reflexivity, and the social interaction inherent in qualitative research can be used to re-conceptualize the term rigor more appropriately for qualitative research (Davies & Dodd, 2002, p. 281).

Reflexivity plays more than one role. Reflexivity can be an individual's response to an immediate context, it can be a critical approach that questions how knowledge is generated, and it can also be an approach to practice that includes how emotion is implicated in practice (D'Cruz et al., 2007). In practice, it is difficult to engage in reflexivity because it is easier to resort to the safety of following policy and procedure (D'Cruz et al., 2007). Reflexivity was a challenge for me as I work within the polytechnic and the political agendas that exist (Cohen et al., 2011, p. 359). It is plausible that a person could tell two different accounts of the same event depending on the audience, and so the design of this study acknowledged that the researcher was embedded in the data generation process.

The proposal of this study included the plan to maintain a self-reflective researcher journal throughout the data generation and data analysis phases of the study. I had committed to a journal entry within one day of each semi-structured interview documenting unexpected, uncomfortable or otherwise notable points of interest that occurred during the interview. This was not completed as regularly or as timely as the initial commitment that I had made.

According to Meyer and Willis (2019), novice qualitative researchers should consider the use of reflexive journaling to grow as researchers. I do believe that more regular reflexive journaling would have helped me to grow even further as a researcher if I had committed to it

and been more disciplined. Qualitative interviewing is "messy work" (Gunaratnam, 2003) and the process of more reflexive journaling would have further improved my awareness of researcher positionality for better understanding of the interview data (Meyer & Willis, 2019). This is a regret or shortcoming of the data collection process in this study. The authors go on to say that journaling also supports navigating procedural and ethical challenges. I am confident that these were navigated appropriately, despite a lack of regular journaling.

Validity and Reliability

This case study was an attempt to study real people during a real, living change event, and so has fewer external checks and balances than is required of other forms of research (Cohen et al., 2011). However, no form of research is exempt from the tenets of validity and reliability, which will be visited in the following sections.

Construct Validity Construct validity was achieved through the operationalization and adoption of definitions from the research literature in this carefully crafted research design (Cohen et al., 2011). Construct validity refers to the appropriateness of measures that are used within this case study for the concepts that are being examined (Yin, 2009). In this qualitative case study, the framework for promoting and assessing value creation was used to describe the value participants placed on the leadership interactions they experienced during the blended learning framework project and how well these experiences conformed to my expectations that were derived from the enabling leadership model (Seale, 2018, p. 587).

Data triangulation was employed to be able to address potential problems on construct validity "because the multiple sources of evidence essentially provide multiple measures of the same phenomenon" (Yin, 2009, p. 117). Triangulation is the comparison of more than one source of data to see if they agree (Seale, 2018, p. 270). To ensure construct validity in this

study, the researcher triangulated the semi-structured interview data and the aspirational narratives collected for analysis across participants. For example, patterns of common experiences revealed themselves in the data generated from the semi-structured interviews. The same event was said by multiple interviewees which allowed for triangulation and contributed to construct validity. Sometimes the event was described by one of the agents in the interaction and sometimes it was described by someone observing the interaction.

A detailed independent audit of the evidence collected throughout the entire research process was another way to address potential problems with construct validity (Miles & Huberman, 2014). This validity check required filing all the data in such a way that the reader can follow the chain of evidence from the first time the researcher begins documentation through to the completion of the final report. Maintaining a well-labelled chain of evidence allows the readers to trace the conclusions of the final report back to the initial research questions formulated (Yin, 1993). The data collected in this study have been stored so that the reader could follow the case study from the research questions through to the conclusions of the study. The reader will not be able to access the data and so an independent audit of the evidence will not be possible in this case study. However, the reader should feel confident that the researcher applied this level of care and diligence with the data.

Internal Validity Internal validity often refers to the adequacy of the internal design of a research study, specifically, for proving causality (Seale, 2018, p. 596). This case study was not concerned with drawing any casual relationships as it was descriptive in its focus. Internal validity is not as critical a factor when performing descriptive case study (Yin, 2014). In this case study, I as the researcher, was matching patterns of results and ensuring that the evidence supported any interpretations derived from the data (Cohen et al., 2011, p. 295). In order to

achieve internal validity, the researcher needs to first specify the unit of analysis (Yin, 1993). The unit of analysis in this case study was the one-to-one interaction. According to Merriam (2009), internal validity measures the degree to which the findings match the actual reality of the phenomenon under study.

To achieve internal validity for this study, I employed a technique called member validation (Carlson, 2010). The process of member validation involves four steps according to Merriam (2009):

1. Making transcripts available to the participants to review and edit.

2. Asking them to confirm that their realities were captured accurately by the researcher.

3. Providing drafts of the findings for the study.

4. Review the details of the final report to ensure that their confidentiality was protected.

Member validation is useful when one of the research goals is to identify and apply themes that are recognized and used by the participants (Seale, 2018, p. 598). There is a potential argument against member validation use. If the analysis presented to participants is framed by complexity theory, then the researcher may decide that the participants are not the best individuals to judge for accuracy (p. 446). In this case study, the participants validated their transcripts and they did review details of the final report to ensure their confidentiality was protected.

External Validity External validity is making sure that I, as the researcher, have clarified for the reader the contexts, theory, and domain to which generalizations can be made regarding this case study by ensuring that the resulting work represents the population accurately (Cohen et al., 2011, p. 295; Seale, 2018, p. 592; Yin, 2003a).

Yin (2003) argued that external validity could be strengthened within a single case study when findings can be generalized against a theoretical framework. He called this analytical generalizability (2014). In earlier works, Yin (1993) described analytical generalizability as a situation when "a previously developed theory is used as a template with which to compare the empirical results of the case study" (p. 31). As stated in the data analysis section, the Uhl-Bien and Arena (2017) model for CLT was used as a template to compare the empirical results derived from this study. External validity is an essential step to achieving true analytical generalization, and inferences are left up to the reader based on the strength of the case study write-up, and details provided (Mertens, 2005). In order to ensure that external validity has been achieved in this study, I, as researcher, have made it clear to the reader that the research is focused on the one-to-one interaction that occurs in the adaptive space, which is a very small slice of the entire CLT model.

External validity was also accomplished through the development of the think descriptions of the six enabling leadership practices. The descriptive details of these actions were generated from the analysis of the interviewee data. Thick descriptions offer an opportunity to make informed conclusions about any parallels between this case study and another.

Reliability Reliability is concerned with minimizing biases and errors (Yin, 2003a). Since the researcher holds the position of Dean at this Canadian polytechnic, there is potential for bias. In order to mitigate this risk, I, the researcher, have removed myself from any active participation on the blended learning framework co-creation and implementation project team, and have disclosed all prior involvement in related projects at the institution to the participants. There was a high probability that I would have prior knowledge of individuals that chose to

participate. For this reason, all staff and faculty with a reporting relationship to my role were excluded from participating in the case study to mitigate risk of any perceived influence due to power differentials. In order to further mitigate the risks of researcher bias, I journaled to bracket my biases (Abrams et al., 2020; Gearing, 2004; Ortlipp, 2008). The process of bracketing my own biases has provided transparency and established a climate of trust. The intention of documenting researcher biases is to aid the researcher to set aside any preconceived notions and listen more closely to the participants own lived experiences. Whether it is humanly possible for qualitative researchers to be unbiased or truly objective remains debatable (Johansson et al., 2020). Journaling did, however, create a documented awareness of the researcher biases to facilitate acknowledgement.

This dissertation research is not replicable; however, it has been conducted in such a way that the reader will gain confidence that it achieved internal consistency (Cohen et al., 2011, p. 295). Consistency and trustworthiness are important in qualitative studies (Seale, 1999). Internal consistency is demonstrated through the coding of the data generated that I, as the researcher, would produce the same results on a different occasion when observing the same blended learning framework project with the same participants (Seale, 2018, p. 607). Again, this would realistically be impossible to replicate, but this well-documented process should provide the reader with confidence that theoretically, it could be possible.

Although replicability underpins the definition of reliability (Winter, 2000, p. 3), this study will be virtually impossible to replicate. However, if it can close the gap between practice and research, replicability becomes irrelevant. Quality and dependability are better terms than reliability. This data is of high quality and dependable because it has helped further our understanding of the interactions that occur during the implementation of a blended learning

framework at a polytechnic (Golafshani, 2003). In the literature, the term generalizability is specific to quantitative methods and should be of no concern in qualitative research (Johnson, 1997; Winter, 2000). Qualitative research is not concerned with constructs based on truth or positivist epistemology, rather, the goal is understanding (Wolcott, 1990).

Ethical Considerations

The following is a discussion of ethical considerations. This discussion will begin with a methodological word of caution from Lester (2016), as this case study was weaved within an existing educational practice:

> Setting out the ground for a doctorate based on practice-as-research does however require considerable clarity and balance. Too pragmatic a focus can underplay the need for appropriate methodological framing and intellectual rigour, and run the risk of candidates producing extended management reports or the kinds of portfolios more associated in the UK with vocational qualifications rather than outputs that are worthy of a doctorate. On the other hand, overemphasising the research aspects can divert attention away from the practice itself and squander the opportunity to explore a live piece of development or change. (p. 128)

The reputation of the Canadian polytechnic and Athabasca University are important ethical considerations worth mentioning. This Canadian polytechnic is typically a risk aversive institution. The polytechnic Research Ethics Board (REB) reviewed and provided feedback before any participants were recruited or any data was collected. I was able to easily address concerns that the polytechnic REB raised in short order. The concerns were minor and illustrated the democratic role of the research process as ethics continue to come under more

scrutiny in business and education (Iphofen, 2011). By definition, ethical issues are contestable, which makes it very difficult to exculpate strict ethical rules (Cohen et al., 2011, p. 442).

Ethical considerations in this descriptive case study were focused on protecting the human participants by acting with special care and sensitivity (Yin, 2014, p. 78). The main data generation method within this case study was the interviews. Interviews involve three main areas of ethical consideration: informed consent, confidentiality, and the consequences of the interview (Kvale, 1996). The ethical considerations for each of these areas will be expanded upon in the following sections.

Informed Consent Consideration was given to each participant's investment in the process. Their axiology, epistemology, and ontology positions affected the process and the outcomes. The participants could have sabotaged the process; the reality is, that participants will provide many unanticipated challenges (Iphofen, 2011). However, this is the reality of higher education and implementing education reform. No negative interactions with any participants were encountered during this dissertation research. All participants were highly engaged and seemed to enjoy the process.

Informed consent was gained in writing. Gaining informed consent from all persons who contribute to a case study is a required formal step and a way to protect human subjects (Yin, 2014). Adequate information was provided, including that participants had a right to withdraw at any time without consequences. One individual chose to withdraw. In addition, the data generated was anonymized and the value creation stories were member validated and reported in aggregate. Any and all possible consequences of the research were made clear to the participants in the informed consent letter. Participants were able to access their own contributions at any time they requested, and all will have access to the completed dissertation upon its completion.

The interview data is jointly owned, and so informed consent was important to obtain so that I, as the researcher, was able to use the data anonymously to complete this research.

Confidentiality The membership and participation in the blended learning framework project is not confidential. To some degree, our institution community will have general knowledge of who has participated directly or indirectly. Protecting the privacy and confidentiality of each participant so that they are not put in an undesirable position is critical (Yin, 2014, p. 78). Anonymity in the data generation has been guaranteed, as was non-identifiability. All participants member validated their own interview transcripts before analysis. None of the data contains any personal information or identifiers.

Consequences of the Interview First, as the Dean at a Canadian polytechnic institute, I have been very conscious to conduct a balanced enquiry (Iphofen, 2011). Getting this balance correct, as researcher and leader, was a careful design consideration. Anderson and Shattuck (2012) argue "insider knowledge adds as much as it detracts from the research validity" when using a qualitative method. This knowledge should be used by the reader to make their own informed decisions on how to interpret the results.

The role of researcher was complex in this study. With my insider knowledge though, I can confirm that this complexity is no more and no less complex of any decision-maker working in higher education. This operational reality is what allows my insider knowledge to be a strength of this study, as I certainly have my own views. The final interpretations may differ from the participants' views and so access to their own data will always be available.

During the data collection phase of this dissertation research, the polytechnic campus had health and safety protocols in place that prevented using public space on campus. This made the use of virtual technology to conduct the interviews a must. The benefit was that this maintained

both participant and researcher safety, as far as COVID-19, and other issues that existed from working unusual hours on a campus were easily avoided. Every consideration was made to ensure that the interviews were conducted in an appropriate, non-stressful and non-threatening manner. Participants selected a time and place that worked with their schedule and their requirements for comfort. The interviews took place over Zoom. If some participants were more comfortable keeping their camera feature turned off than that would have been accommodated. However, no participants expressed any concerns with being audio and visually recorded.

Great care was taken to prevent any harmful effects of the research to the participants of this study and the participants in the blended learning framework project that decided not to participate in this study. The benefits firmly outweigh the potential for any harm to come about as a result of conducting this research. Often, the participants stated that they were really enjoying this reflective journey down memory lane. The research could even benefit participants and the Canadian polytechnic community, including our students. Participants give to the research, but the research will also be able to give back to the participants in the form of a collaborative experience with invested colleagues in the success of applied education. This reciprocal relationship certainly appeared to be a benefit to the participants within this polytechnic community.

Table 3

Research Timeline (Post Ethics Approval)

	Weeks																							
Activities	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Participant recruitment																								
Participant screening and notification																								
Participants complete and submit aspirational narratives																								
Design, refine and schedule semi-structured interviews																								
Conduct semi-structured interviews																								
Promoting and assessing value creation and thematic analysis																								
Researcher journaling/ observation field notes																								
Synthesis and write-up																								

Obstacles

What could have been a major obstacle, a global pandemic, became a contextual reality that shaped the design and execution of this research study. It certainly has also influenced the data collected and needs to be taken into consideration when reading the findings, analysis, and

conclusion. It also needs to be taken into consideration when applying these findings to your leadership practice. It truly is unprecedented.

Timelines

Having previously mapped out the candidacy requirements, as well as the time it would take to obtain the research ethics approval from both the Canadian polytechnic and Athabasca University, the research start date was projected to be June 1, 2021. The research start date for the project was delayed and became November 2, 2021. The timelines measured in weeks for the participant recruitment, data generation, and analysis are summarized in Table 3.

Summary of Chapter Three

In my experience, education is a very complex whole. This dissertation research has illustrated that all levels of complexity have been given serious consideration to support the choices made and the determination of the nano level focus on leadership strategy as the unit of analysis. Evidence shows that there are often many solutions to an ethical problem or dilemma (Iphofen, 2011; Shapiro & Stefkovich, 2016). I have exercised researcher curiosity and rigour as I persevered through this process and the challenges that came my way.

Cunliffe (2011) captured it beautifully when she said,

> "I suggest beauty and rigor lie in crafting our research carefully and persuasively, being open and responsive to the possibilities of experience, people, ideas, materials and processes, and understanding and enacting the relationship between our meta-theoretical position, our methods, our theorizing, and their practical consequences." (p. 667)

I attribute the completion of this research partly to having the courage and discipline to remain open to continue the exploration, and moving with the twists and turns that occurred along the way.

As educators, we constantly practice honing our craft through reflection-in-action (Schon, 1983). Mogashoa (2014) states that "one needs to avoid simply citing theory to support one's argument, and to actually incorporate theory into the logic of one's study and use it to deepen one's research process" (p. 104). This case study is my craft and I am confident that the research design radiates logic that reflects my theoretical worldview. Indeed, my attempts to blend theory and practice, to reframe educational leadership for the digital age, has led to this pragmatic, descriptive case study. This body of work aligns with my values of integrity, meaningful work and authenticity, in addition to being a valid methodology to answer the research questions posed earlier.

In the next chapter, an overview of the findings is provided.

Chapter 4: Findings

"Leadership is a series of behaviors rather than a role for heroes."

– Margaret Wheatley –

This chapter describes the results as they pertain to the research questions proposed in Chapter Three. As stated in Chapter One, this case study is a blended learning project at a polytechnic institution in Canada and the unit of analysis is the interaction between two agents. This case study has generated rich descriptions of enabling leadership and provided new insights into how leadership strategy influences emergent phenomena. The tool used to generate and organize the data was the Promoting and Assessing Value Creation in Communities and Networks Conceptual Framework created by Wenger, Trayner, and de Laat (2011). For reader ease, I will refer to this as the PAVC tool going forward. The resulting value-creation stories have given voice to how the participants enacted, experienced, and valued leadership strategies during the project. This chapter reports on these value-creation stories and the thematic analysis completed in regard to the six enabling leadership actions identified by Uhl-Bien and Arena (2017): linking up, creating bridges, leveraging adaptive tensions, influencing with tags and attractors, creating simple guidelines, and network closure.

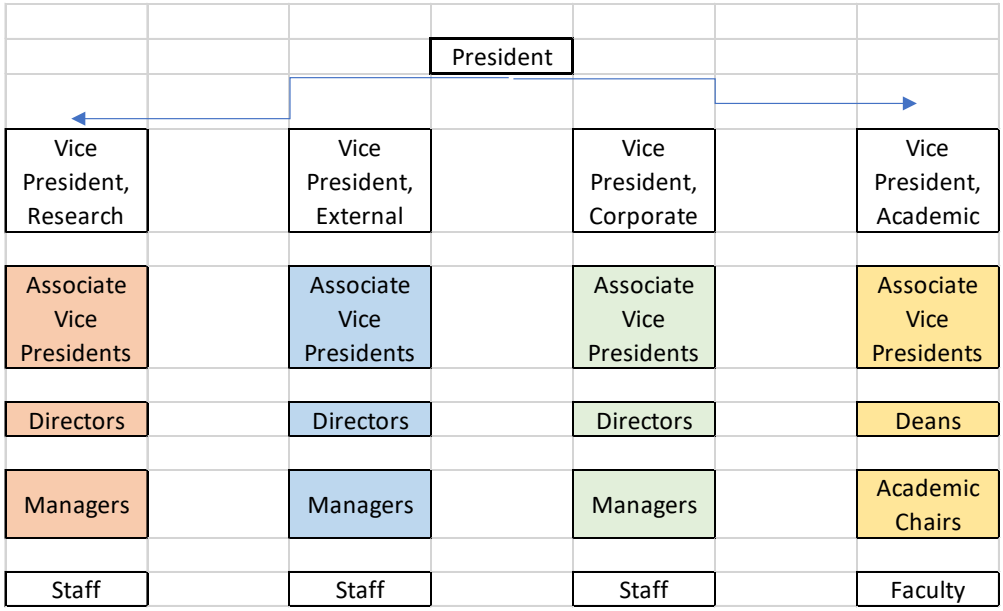
First, I highlight the networked relationships that were revealed through the interviews. Next, I go through the thematic analysis process that was conducted, underscoring the basic themes, the organizing themes, and the global themes that emerged. Lastly, I share the value-creation stories that transpired.

Institutional Networks

This case study was built from the responses of 13 interviewees who held various positions throughout the organization. The traditional hierarchical reporting structure is outlined in Figure 5. Interviewees held various positions in the middle management band across all four divisions. This band of middle management includes positions that supervise direct reports and have job titles that include managers, Academic Chairs, Deans, Directors and Associate Vice Presidents.

Figure 5

Institutional Hierarchical Structure

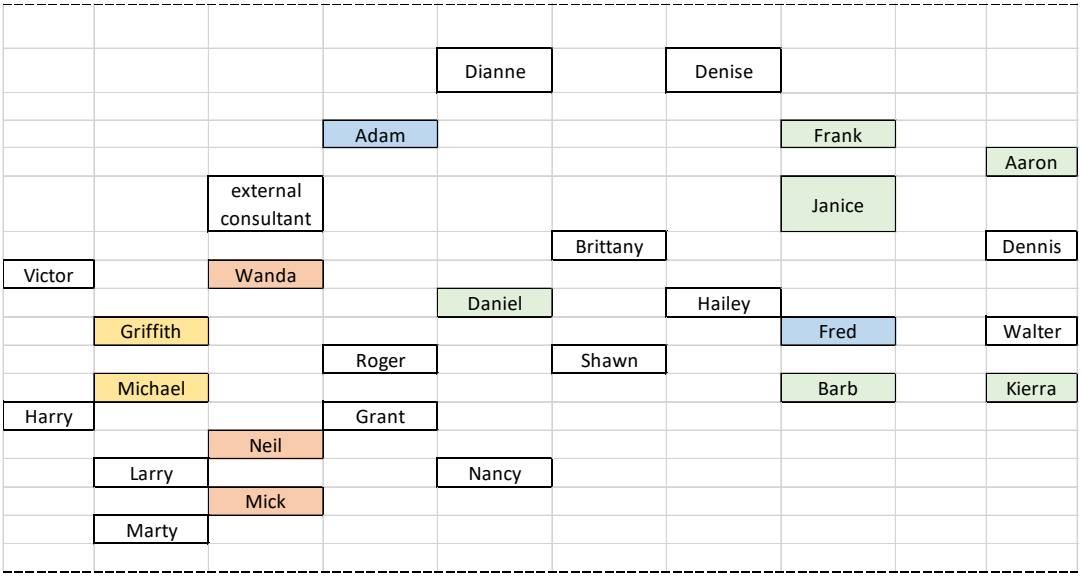


The interviewees were assigned pseudonyms that protected anonymity. Figure 6 illustrates the networked relationships that revealed themselves through the interview process. Each color represents a unique division. A hierarchical relationship or reporting structure will contain employees from the same division and therefore, the same color. Through the interview process, how the employees worked across divisions to complete work started to reveal the networked relationships, connections between the divisions, that supported workflows. These

networked relationships depict a truer visual of the inner workings of the institution and how information flows.

Figure 6

Networked Relationships Within the Institution



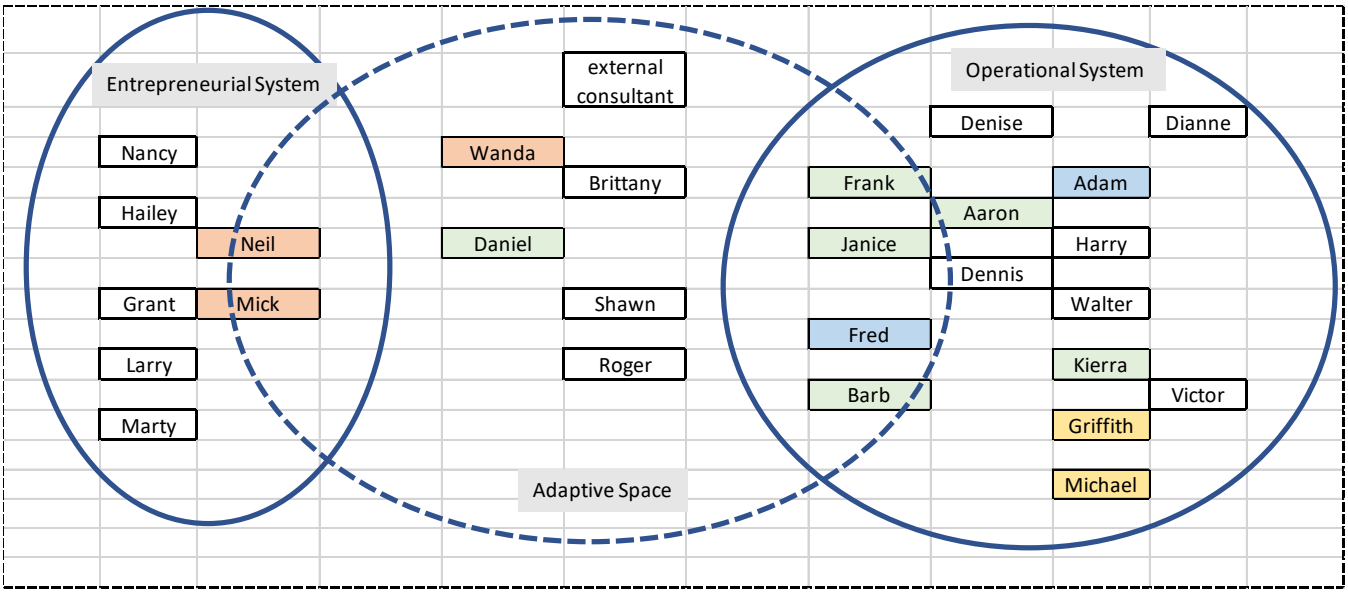
In Figure 7, the networked relationships superimposed with the Complexity Leadership Model is shown. When the networked relationships are shown in the context of the Complexity Leadership Model, the functions within the polytechnic system areas become apparent. The entrepreneurial system helps the organization adapt to market pressures by capitalizing on new opportunities. Agents operating in the entrepreneurial system focus on initiating, iterating, and socializing creative and novel ideas for the purpose of innovation. These roles are focused in the business development departments within the institute, such as Continuing Education, Corporate Training and Applied Research. The operational system continues the organization's efficiency mandate and financial accountability with a focus on stability. The agents operating in the operational system align and execute the processes core to the running of the business, such as the Registrar, Accounting, and Employee Services. Between these two systems lies the adaptive

space, where enabling leadership strategies can be observed. Enabling leadership operates in this networked space and interfaces between the operational and entrepreneurial systems to enable the connecting of stability and novelty to progress new ideas and innovations.

Looking closely at Figure 7, you can observe the weighted difference between the entrepreneurial system and the operational system. The interviews revealed many more roles in this polytechnic associated with operations than with entrepreneurship. The significance of this weighted difference will be discussed more fully in the following chapter.

Figure 7

Adaptive Space Within the System



Thematic Coding and Analysis

Inductive and deductive approaches were employed. Thematic network analysis method was applied, which allowed the systematic extraction of lowest-order themes (basic), to be grouped to describe the six enabling leadership actions (organization), and the super-ordinate themes (global) encapsulating the principle metaphors as whole and capturing the interplay and

interactivity (Attride-Stirling, 2001, p. 388). I had entered the analysis with full intentions of being committed to inductive methodology exclusively, but it made sense to center the coding around the six enabling leadership practices. The six enabling leadership practices became the organizing theme codes. As I started to go through the interview transcripts, practices or behaviors that seemed to promote a positive or negative outcome or reaction started to reveal themselves. Then I went back through the transcripts again to get the richest descriptions possible for each of the six practices. To answer the first research question, how are these actions the same or different as each of the six enabling leadership actions, these three concepts became the basic themes: a rich description (same), promotion of a negative outcome or reaction (difference (-)), and promotion of a positive outcome or reaction (difference (+)).

In order to answer the second research question, how do participants describe the interactions they have experienced during the project, the interplay of the six enabling leadership practices along with the knowledge of complexity theory, five global themes that will be useful to leadership practice were exposed. These five global themes are missed opportunities to leverage adaptive tension, understanding as an attractor, memory as a catalyst or inhibitor on information flows, networked relationships, and adaptive space in the physical space. Each of these five global themes will be discussed in detail in the analysis and discussion chapter.

Basic Theme Identification

As stated above, the six enabling leadership practices became the organization themes. In order to answer the research questions and develop rich descriptions of each enabling leadership practice, three basic themes were chosen. The first basic theme was negative examples of each of the six enabling leadership practices; the second was positive examples of each of the six enabling leadership practices; and the third - descriptive codes of each of the six

enabling leadership practices. The relationship between the three basic themes and the organizing themes is highlighted in Table 4.

Basic themes could be coded to more than one organizing theme. Basic themes could be a positive example for one of the six enabling leadership practices and a descriptive code for one of the six enabling leadership practices. Basic themes could also be coded to more than one organizing theme. The relationships and interplay of the organizing themes, the enabling leadership practices, started to be revealed from the findings.

Table 4

Relationship Between the Basic Themes and the Organizing Themes

Basic Themes	Organizing Themes
positive example	**Linking Up**
negative example	
descriptor	
positive example	**Brokerage (creating bridges)**
negative example	
descriptor	
positive example	**Leveraging Adaptive Tension**
negative example	
descriptor	
positive example	**Network Closure**
negative example	
descriptor	
positive example	**Simple Rules**
negative example	
descriptor	
positive example	**Influencing with tags and attractors**
negative example	
descriptor	

Organizing Theme Identification

As previously mentioned, I had planned on using inductive thematic analysis exclusively, but by nature of how the first question had been phrased, the six enabling leadership practices naturally became a logical way to organize the findings. Applying deductive thematic analysis, the organizing themes then became the six enabling leadership practices: linking up, leveraging adaptive tension, influencing with tags and attractors, network closure, creating bridges, and creating simple guidelines.

Table 5

Relationship Between the Organizing Themes and the Global Themes

	Organizing Themes					
Global Themes	information flows	linking up	network closure	adaptive tension	simple rules	tags and attractors
Adaptive space in the physical space	X				X	
Understanding as a strange attractor	X		X			X
Maintenance of networked relationships	X	X	X			
Missed opportunities to leverage adaptive tension	X	X		X		
Memory as a catalyst/inhibitor on information flows	X	X		X		

Global Theme Identification

As the basic themes within each of the organizing themes were reviewed, relationships between the overlap of the basic themes started to cluster into global themes. For example, a basic negative theme for information flows was also coded as a basic negative theme for adaptive tension. The commonality was that it revealed a missed opportunity to leverage adaptive tension in a way that would have clearly progressed the project in a positive direction. These clusters of codes became the global themes. Table 5 shows the clustering of the organizing themes into global themes. Interviewee statements that mapped back to two or more organizing themes demonstrate the interplay between the six enabling leadership practices. Going through the data revealed more and more examples of the interplay. An example of this is from Frank's story when he talks about the inability to get access to the project goals. His inability to gain access to documents that would explain the project's purpose demonstrated a blockage of information flows. Through his interview, his responses indicate that he experienced ineffective relationship building, a lack of linking up, because he did not have access to this information. His frustration was amplified as other leaders were unable to sense or interact in a manner that could have reduced or leveraged the tension. Together, the interplay of these three organizing themes forms the elements that explain the global theme of missed opportunities to leverage adaptive tension.

Next, each global theme will be illustrated using interview quotes, as well as highlighting some of the organizing theme interplay revealed from the thematic coding process. This will be a presentation of the findings only. An analysis of the findings will be discussed in Chapter Five.

Adaptive Space in the Physical Space In the CLT literature, the concept of adaptive space remains ambiguous. The data generated in this case study did reveal clues or indications of where and what adaptive space may actually be. As a pragmatic researcher and leader, findings that seemed to answer where adaptive space is in relation to the physical space we operate within, were of most interest. These findings are important because if enabling leaders are expected to create adaptive space, they need to be able to understand what it is. Being able to identify and observe adaptive space working and sharing the contextual conditions that surrounded those events will also help leaders to foster the conditions that support adaptive space.

A quote that begins to reveal what adaptive space may be is this one from Aaron:

> "And so when the idea was brought up, like at the very beginning, when I first mentioned it, they weren't super on board with it. I think they just weren't in the headspace to think about it. But eventually, it was decided that was the best way to go forward."

This quote indicates that adaptive space may be better exemplified in time, not space. The comment from Aaron demonstrates that if we think of adaptive space as giving someone more time or approaching them at a different point in time, that is where and how changing minds may occur.

The global pandemic caused a disruption in the entire workflow of the organization that seemed to enable the success of this project. Its significance to creating adaptive space was impossible to untangle from this case study. The institution ceased all operations and delivery of classes on campus on March 18, 2020, and all employers were forced to work from home and

use virtual technology to continue working. The impact of this on people's mindsets and habits of working is reflected in this quote from Michael:

> "Yes, I think if we had still been on campus, we're all creatures of habit. So when you're in the same office space, and the work in front of you for the day is kind of similar to what you've been doing, it's very easy to keep that space in your mind that not much has changed. We were sort of pushed through a door, this is not an option. And I think that has opened up a lot of minds as to how agile we have to be."

This quote exemplifies that adaptive space requires boundaries. It seems that the lack of choice provided boundaries that were very useful to accelerate the acceptance of change.

The findings reveal that adaptive space has a component of time involved. The findings also reveal that adaptive space can accelerate change when boundaries are clearly in place. The data revealed a strong interplay between the organizing themes of information flows and simple rules.

Understanding as a Strange Attractor Understanding is a strange attractor. As stated previously, strange attractors represent a path of innovation and assist a CAS to scale more challenging situations to reach new levels of performance (Boal & Schultz, 2007; Goldstein et al., 2010). This makes understanding a critical element in managing change and enabling educational reform, i.e., a strange attractor.

The findings from this case study show that increased understanding is achieved when agents can ask questions that improve their own understanding. When understanding increases, new relationships form and previous relationships deepen, as per this quote from Frank:

"Myself and Rob, we meet weekly. And so we talk about these things. We start to poke holes, whether it's budget planning or resource allocation. I finally said, I'm not the only one responsible for workforce planning. And so we took the same course and it was fun. It's fantastic because we now have a common language."

Equally important, the findings indicate that a lack of understanding starts to negatively impact information flows. The research revealed the following reasons for a lack of understanding:

1. The agent is fearful to ask.
2. The agent is actively digging for understanding and cannot get answers.
3. The agent assumes that no one else understands either, so they choose to remain silent.
4. The agents themselves are so new in the organization that they are confused and do not know where to begin.
5. The agent has past memories that are impairing their ability for understanding in the current project.

Lots of participants attributed their increase in understanding to learning to ask more questions. Increased understanding and learning the big picture of the project, seemed to indicate a turning point for agents and increased motivation or dedication to the success and completion of the project. The use of tags by some of the agents really helped other agents to infer meaning and increase their understanding of the project vision. Some examples of tags in the participants' own words include:

Tag: hunting and gathering

Tag: Is it bigger than a breadbox?

Tag: Is it fit for purpose?

Tag: we're flying the plane as we're building the plane

Examples of the impact of tags is illustrated in this quote from Neil:

> "And we're all kind of like, I don't know. We haven't done it yet. It was good to set up the process, but difficult in the same time, because we didn't know what our process was yet. So I guess the analogy we've been using is we're flying the plane as we're building the plane. And that's just what we had to do. So we're figuring it out as we go along."

Role titles and the evolution of the role titles could also be considered another tag. The evolution of Earned Revenue Coordinators to Portfolio Coordinators to Portfolio Strategists to Product Strategists over a period of less than one year, is a pace of change unprecedented at this institution. That alone had significance and represents the speed with which this project moved, and the commitment to adapt and evolve that the people in the project had.

Other agents identified a lack of understanding as the reason for slow progress. Regardless of whether or not they were in the enabling, operational or entrepreneurial areas of the organization, a need for understanding was required of all agents.

The findings revealed many examples of network closure. As previously stated, network closure is when other members of the project team, other than the leader, advocate for the project and gain the right sponsors that ultimately contribute to the success of the project (Uhl-Bien & Arena, 2017). In this case study, many individuals were mentioned as advocating with Executive for more resources or lending support, whether it be a listening ear that helped someone problem solve to get over a hurdle or facilitating connections to develop new curriculum products.

The findings demonstrate that a lack of understanding starts to negatively impact information flows. The findings also reveal that an individual's reasons for lack of understanding are unique and not readily observable. The data highlighted a strong interplay between information flows, network closure, and the use of tags and attractors.

Maintenance of Networked Relationships A network is a collection of agents acting in parallel, creating rich interconnectivity (Uhl-Bien & Arena, 2018). A network is made up of a series of one-to-one relationships that are interconnected through mutual relationships that crossover. It is then worth studying how a single relationship is formed and maintained, then to reveal insights about the network. Findings in this study revealed that there is a positive feedback loop between linking up and brokerage that seems to intensify and maintain the relationship. When one agent learns new information, it triggers a need to link up with that other agent and share that information, positively contributing to increasing information flows. This new bridge that has been created for information flows between the two agents seems to intensify and if useful to the organization, outlive the project. Creating new information and triggering new ideas at the intersection of one relationship seems to trigger another reason to link up again, energizing the network connections.

Some examples of this within this case study include the relationship between Employee Services and Finance to start working together, taking courses together, and building new language together. This relationship has far outlived the project. Another example was between Employee Services and the Non-Credit talent team to come together on this project but continue to work together to continue to strategize new ways to recruit and hire talent. Yet another example was Information Technology Systems (ITS) and Marketing to come together and co-chair the implementation of the Destiny One student registration platform. In each of these

examples, the relationship was maintained through this positive feedback loop of brokerage and linking up.

This case study also generated evidence of linkages, the connections that hold bonded agents together (Uhl-Bien & Arena, 2018). It starts with a single interaction and builds from there. Some linkages become stronger than others as the positive feedback loop between brokerage and linking up intensifies, the more time it is repeated, or the more impactful the interaction. The linkages deepen as the number and quality of interactions deepen. Examples from the findings include the interactions between Frank in Employee Services and a specific Finance employee. Another example from the findings is Mick in the Continuing Education new department and Aaron from Employee Services whose linkage continued to be intensified because of the common desire to maintain the "flexibility and agility that was envisioned for the non-credit area".

The findings provide some insights into how networked relationships are maintained and generated evidence for linkages. They also indicate a positive feedback loop between linking up and information flows. Future research should be designed to explore this interplay further and explore what conditions modify the feedback loop.

Missed Opportunities to Leverage Adaptive Tension It was observed that adaptive tension can show up as conflict, frustration, or even silence. When adaptive tension is not leveraged or when the dialogue stops, one should not assume the conflict has been resolved. It can be very difficult to observe and does not present the same way in everyone. The participants' feedback indicates that adaptive tension is as unique as each person; hence, it is not surprising that the case presented many missed opportunities where adaptive tension could have been leveraged to move the project forward or even to speed up the project, but no one saw that it was

there. This awareness that adaptive tension is invisible is important to developing an effective enabling leadership practice. Leaders will need to actively look for the adaptive tension to create dialogue and safe spaces to uncover the adaptive tension.

Participants described how through dialogue, another agent was able to turn their frustrations into "well, let's just try something". Agents who felt they were safe to try new things were able to do so in the absence of all the required information. Although they were still frustrated, it did not stall their ability to make progress on a task. In their own words, they felt safe to try, safe to speak up, and they knew they had permission to let some things burn. It was expressed many times that they did not really know what they were doing, but they thought they would try something. They were made to feel that they had the freedom to contribute, and this resulted in them asking more questions with the purpose to learn and a desire to understand the whole project. Autonomy and trust fueled the momentum to keep work flowing forwards, even in the presence of many unknowns.

Agents described a specific behavior that prevented conflict from being leveraged as: "When the vision becomes an extremely bullish aspiration, one that ignored the current state". This would cause fewer people to speak up, perhaps because the path to close the gap between the aspirational state and the current state was insurmountable. This can be tempered by balancing the vision with a solid acknowledgement of the current state in one's interactions with other agents. When the conversations were able to acknowledge the current state and start building the steps to achieve the vision, that is when progress on the project would pick up again.

Not feeling safe to speak up was identified as a theme. This came up most often when the participants were asked about conflict during the project. Again, not something agents can

easily observe and so calling attention and having dialogue to ensure all agents feel safe to speak up is an important learning. When agents do not feel safe speaking up, this causes information flows to become blocked and it delays progress on the project needlessly. Another important finding is that silence should not be taken as an indicator that conflict has been resolved. The case study revealed the issue of silence from both the leader perspective and the follower perspective. One leader stated boldly that everyone had accepted the change but the same situation from the follower perspective, everyone fell silent because they no longer felt safe to speak up. This was a great example of a missed opportunity to leverage adaptive tension.

The findings provide some insights into how adaptive tension may present in individuals, and demonstrates that adaptive tension is often invisible. A strong interplay between the organizing themes of information flows, linking up, and adaptive tension was identified.

Memory as Catalyst/Inhibitor on Information Flows Memory plays an important role in brokerage of information flows or creating bridges. As per the participants' feedback, memory can be a catalyst or it can be an inhibitor of a change initiative or project moving forward. Three main sources of memory were identified that, for the purposes of analysis and discussion, I have named as inside memory, outside memory, and absent memory. All three of these memories can be either toxic and act as an inhibitor to information flows, or they can be safe and act as a catalyst to improving and/or increasing information flows. This is outlined in Table 6 below.

It was noted that rather than discrete categories, each memory type acted as a catalyst or inhibitor on a continuum, which is context, time, and agent specific. The findings suggest that a memory may be held by an agent and it may act toxically to inhibit their ability to engage successfully in change, and yet once that memory is shared through dialogue and received

through interactions with another agent, it can actually be used to provide safety and catalyze change.

Table 6

Memory Acts on Information Flows as Either an Inhibitor or a Catalyst

	toxic	safe
inside memory	inhibitor (-)	catalyst (+)
outside memory	inhibitor (-)	catalyst (+)
absent memory	inhibitor (-)	catalyst (+)

Some examples of inside memory shared by participants centered on the implementation of a different software platform a couple of years prior to this project, Banner 9. In their own words, one participant described the Banner 9 project as mentally and emotionally scarring. Others expressed fear and anxiety about being part of another big project within the institution because their past experiences had been very negative. How employees dealt with this toxic inside memory was still an individual response. For some, it caused a great deal of doubt and hesitation, which they had to overcome on this project and caused time delays on their contribution to the project. For some participants, it actually caused a complete purposeful redirection, and a speedy and deepened commitment to the success of this project. The difference in perspective may be attributed to dialogue and talking through the inside toxic memory. Acknowledging it and bringing attention to it allowed it to be overcome.

There is memory in the form of toxic institutional memory and this can be very challenging to overcome because it creates great inertia to move forward. It shows up as fear, anxiety, and “we tried that before so this won’t work” sentiments. There was evidence though,

that if the toxic memory is so great, it can facilitate a total rebellion and fuel a desire to try something new. This takes the recognition of the toxic memory. It needs to be identified, discussed, and receive purposeful redirection. Evidence of both exists in this case study. The administrative agents required to operate the new e-commerce site had highly toxic institutional memory. The inertia was finally overcome when some employee turnover created space for new thinking. Total rebellion was also experienced as the ITS agents tasked with implementing the Destiny One platform discussed and decided they would not run the project anything like the previous Banner 9 launch.

The second memory was outside memory. Agents bring memories from outside the organization, experiences they had before joining the organization, with them to work. These could also be categorized as both safe outside memory or a toxic outside memory. They played out differently than the inside memories; an outside memory was invisible because they were unique to individual agents as there is no common experience to identify these memories to other agents. One example of a safe outside memory is tied to a past positive experience around debriefing a project through a lesson's learned activity, which had a negative impact on the project because this activity was missing in the case study was received negatively for one agent. This was certainly an important practice that was conducted at a previous organization, and its absence from this project caused doubt and decreased confidence in this project progressing.

Another example was a toxic outside memory for a particular agent that surfaced during a heated conversation causing a conflict in this project. The agent reflected and later apologized, recognizing that her past toxic experience had influenced an unwarranted overreaction in the current situation. The agent shared the details and was able to rebuild the relationship stronger than if the outburst had not occurred, but the interaction certainly impacted the project and

caused initial delays. These examples demonstrate how personalized the role of memory can be on information flows.

The final type of memory identified has been named absent memory. It arose through the description of agents speaking about the loss of resources. As the agents described this loss of resources, it became clear that it was not the quantity of resources that caused issues, it was the loss of memory that resource held that was now missing from the organization and the negative impact it was having on information flows was the issue. A particular agent knows things that are not documented and it leaves a gap in information flows that needs to be rebuilt. An example of this occurred when a Marketing person who held key knowledge about the implementation of the new e-commerce platform left the organization. Another example was the previous Earned Revenue Coordinators who had left the organization and were not in the new structure. The loss of memory left many, many courses in complete disarray as the new agents needed to piece together the curriculum, the talent, and the delivery patterns. The loss of institutional memory due to employee turnover can catalyze or inhibit information flows. Absence of particular memories can create space for new thinking and new ideas to be implemented. It can also impact information flows negatively because of the extra time required to rebuild processes and procedures. The role of memory in change is deeply personal. The personalization of memory will determine where it sits on the continuum of toxic and safe. Who holds the memory, how the memory is shared, and who receives the knowledge of the memory will determine if it is detrimental to a project or beneficial to a project. Regardless, identifying memory and discussing the memory is a key leadership strategy in change management, and by extension, educational reform. This is a useful leadership practice to advance education reform.

The findings provide insights into how agent memory may impact the progress of a change initiative. The findings demonstrate that agent memory is often invisible. The data revealed a strong interplay between the organizing themes of information flows, linking up, and adaptive tension.

Value-Creation Stories

This section will share each of the 13 participants' value creation stories. A value creation story is constructed in five cycles. Cycle one describes the immediate value of the interaction. It includes descriptions of how a participant brought their past experiences and practices into the project, the new learning space, and the adaptive space. Cycle one also includes descriptions of debates on important issues and feedback on quality of responses to questions around the interactions.

Cycle two of the value creation story highlights the potential value of the knowledge capital present in the community or project. This cycle contains descriptions of difficult problems or past failures, it contains evidence of an interest in learning and leadership activity, and it includes self-reporting on confidence, changes in perspective, and level of trust amongst the people involved in the project.

Cycle three of the value creation story focuses on the applied value and the tangible changes in practice and process. This cycle contains descriptions of new collaborative arrangements that had formed and how these new connections were leveraged in the accomplishment of the project tasks. It is also the implementation of advice, solutions and insights that led to task accomplishment.

Cycle four of the value creation story highlights the realized value through performance improvement. This cycle contains feedback, achievements, and descriptions of the increased interest in knowledge itself.

The value creation story concludes with cycle five: reframing value and redefining success. This was uncovered by looking for different and new conversations with different and new stakeholders, and describing the involvement and interactions with these stakeholders. Cycle five also looks for new sets of expectations in the participants' own words.

The following sections are the individual value creation stories. Each story was created from the two data collection methods, the written ground narratives and the single interview completed by each participant. The stories have been reviewed with each participant and their permission received to write them in full for the purposes of this dissertation. The names have been changed to pseudonyms to protect their anonymity. The reader should observe that the focus of what is valued varies from participant to participant, though their experiences overlap. Some individuals are focused on the personal growth they experienced, and others, on the project completion. When reflecting on the collective voice of these stories, the richness that diversity brings to a project is apparent.

Frank's Value Creation Story

Frank works in Employee Services and his role focuses on supporting the polytechnic on its workforce planning with a long-term horizon. He describes his role as looking 10-11 months into the future, not executing the immediate day-to-day operational needs as other members of the team perform those transactional tasks. He describes himself as having a strategic strength.

Frank brought this longer-term view, his experience with this past practice, into the learning space of this project. He was able to debate on the important issues that arose from this lens and position. He spent a lot of effort in coaching the team members to ask more detailed questions regarding the tactical things that needed to happen, but also the bigger picture items like collective bargaining and attempting to remove barriers for the organization to be successful.

Frank did ask tough questions of the stakeholders he had access to, and challenged assumptions of how compensation is structured and how talent is found and retained, with the goal of maximizing the use of limited financial resources.

Frank demonstrated three enabling leadership practices simultaneously. In order to support his team members to be successful, he practiced linking up, creating bridges, and network closure. He was very purposefully bringing back information from his meetings outside of his department and sharing that information with the team. This demonstrates creating bridges through improving information flows. He was linking up through connecting members of his team, with members from outside the team. He was also practicing network closure because he was advocating for the success of the project outside of the project team members across his entire department and within the other departments through regular meetings. Frank discussed a deep desire to understand because that is when he can do his best work.

When asked about leveraging adaptive tensions and any conflict, Frank referenced a new practice that had begun to form during this project. That was Employee Services meeting regularly with the Finance department to talk about this bigger picture and longer term items that impacted strategic workforce planning.

The two departments even enrolled in and completed a strategic workforce planning course together and since have developed a common language to continue these conversations. This course in the past had been impossible due to costs and travel. The pandemic had made the delivery of this course available online and financially feasible.

When asked about the quality of conversations with stakeholders now, Frank says they are better because, "I think we're ready to listen, that sounds terrible. I think it's more about us ready to listen, to be honest." He goes on to say that Employee Services stopped saying no upfront, rather, they started to listen and determine what the hiring managers needed and to approach interactions with a yes position focusing on how they could make it happen, rather than worrying about it going the right way. Frank talks about relinquishing control and that Employee Services stopped trying to control everything and just tried to figure it out. Frank also describes when he recognized that his role was not to say no, rather, it was to identify risks and barriers and provide solutions.

Frank clearly expressed that there was a point where he felt the expectations were finally clear. His leaders had communicated what the priorities were and that allowed Frank permission to let items that were not a priority to fall off the to-do list.

Michael's Value Creation Story

Michael works in the delivery of applied education. His passion is accessible education and he feels very strongly that blended and online learning modalities make traditional adult education more accessible. Michael was involved in online learning delivery before the segregation of credit and non-credit. He describes the confusion that his department felt during the change was because everything that was being described in the new non-credit delivery area was not who they were. This forced them to redefine their work and their products. They

embraced this change and rebranded their area. Michael mentions that an advocate for this was Shawn, a senior leader in their department who exercised a high degree of network closure, creating bridges, and influencing with tags and attractors. Shawn acted quickly and consistently to leverage the adaptive tension towards positive change.

The announcement of the segregation of credit and non-credit caused a lot of confusion for faculty and students that were served by Michael's department. The announcement allowed for a rebranding effort to be launched and clear ongoing communications to form, to assist in clearing up confusion. The department would no longer be continuing education because that title was moving with the non-credit courses. The department adopted part-time studies as their title and started emphasizing this in all communications to all stakeholders impacted. Shortly following the announcement, the pandemic forced all operations to be conducted remotely. This introduced new channels for communication, the most prevalent being the use of MS Teams. Michael describes how fewer in-person interactions assisted in dissipating past team tensions, but also how fewer in-person interactions forced more formalization in connecting because the ad-hoc bumping into team members was no longer possible. This paradox of fewer unintended interactions yet more, faster intentional interactions brought about by working remotely, is a theme experienced and expressed by many of the interviewees.

Because of the location of Michael's department within the polytechnic, he describes not only a change in language because of the segregation of credit and non-credit, but even a death to some of the past terminology that was either moving with non-credit or ceasing to exist. It was important that Shawn led that rebranding effort and supported Michael's team in executing quickly. The other change in practice was that communication improved because it became more

formalized, more often, and in writing. No longer could an informal, word-of-mouth or bump into you in the hallways, be a form of communication.

Michael mentions that he believes their communication to be more inclusive since being forced to work remotely. He also mentions that he has witnessed more engagement between full-time day faculty and the part-time adjunct faculty to collaborate on course details than when the department worked on campus. Emails are written more clearly and meetings are always recorded so that anyone can access them. The space that the MS Teams technology created for collaboration has been positive.

The clarity in day-to-day operations that the segregation of credit and non-credit provided has been positive for this department. They were able to re-brand themselves to better align with the market and student needs. Leveraging technology, such as MS Teams, has made their communication channels more inclusive and more effective. The new set of expectations allowed them to say good-bye to the past and move into the future.

Janice's Value Creation Story

Janice works in Employee Services and enjoys the part of her role that is responsible for creating organizational structures designed to support institutional strategic goals. Janice was very clear on the big picture early in the project, but admits the plan was very short on details. She describes the senior leadership as generally listening to her advice though they certainly challenged assumptions. Janice played a key role in the early days of the design of the new department structure, looking to create efficiencies with centralized administration and operations.

Early in the planning of this segregation project, one of the goals was to see if some of the rule bound ways of operating in a post-secondary could be streamlined to stop slowing down the business. The concept of an entirely separate legal entity was even explored as an option. How to engage with talent and what type of employee or contract relationship was appropriate to support the business was also being explored. As courses were being developed and delivered differently, there were new languages and new titles for a traditional faculty role like Instructor, Facilitator, Business Partner or Moderator.

During the project there was a contract template provided for a very specific situation that was then applied in other situations, incorrectly. When this came to the attention of the document creator, the incorrect application of the contract template was addressed and remedied. This was an example of an error and then learning from the error.

Also, during the project, there were big picture philosophical conversations happening with senior leaders that did not happen with the people that were executing on the transactional day-to-day work. Janice admits that this was a flaw in the flow of information. When things did not make sense to some of the team members, that is when Janice realized that a particular piece of information should have been communicated earlier. This would cause temporary conflict that was easily cleared up with additional conversations and information. The initial consultant that was hired that instigated the segregation project was referenced as an advocate as he practiced network closure in the very early days.

As the project progressed, significant decisions were made, that then required smaller decisions to be made. The way that the talent shop department came to be, inside the structure of the new division, was through a collaborative effort. The group realized that there were not existing staff within the polytechnic that would be able to recruit the talent this new department

would require to be successful. A big decision that impacted the project was that the existing Banner platform was not working for non-credit and so the new platform, Destiny One, was prioritized. The implementation of this platform became its own major project as a result of the segregation of credit and non-credit.

Janice describes realized value through performance improvement when the need for talent and the need to retain talent in ways that may be non-traditional for a post-secondary started to drive how risk was being talked about, and in turn, managed. Specifically, collaboration between Labor Relations and Finance personnel to outline looking at the total responsibilities to drive how new contracts could be crafted so that hiring new talent would be in alignment with achieving business goals. This was a redefinition of success.

Wanda's Value Creation Story

Wanda describes that the immediate value of being involved in this project was that she believed in the change, and that it would help bring greater efficiency and performance to the work. She also describes a simultaneous sense of self-preservation as it became very clear that some of those efficiencies would be realized with fewer positions. As a member of the Individual Learner Business (ILB) Council, she had a lot of knowledge and expertise that she shared very willingly to advance the change. She was afforded an Executive Coach to assist with her own professional development, which was very valuable throughout this change process. She talked about how this was creating something brand new, but also like "putting the wings on an airplane mid-flight". She was also able to work with the external consultant and contributed greatly to the consultant's initial report and recommendation that resulted in the segregation of credit and non-credit.

Wanda talked about how her participation in this project helped her to build a higher tolerance for ambiguity. At the beginning there was a long period of trying to figure out what each role would do. Brittany would refer to Wanda's team as the "hunters", to go out and get new business, but the amount of internal gathering that had to occur first was immense and underestimated. There was a lot of work to pull all the courses together and then decipher the state of each course regarding quality curriculum.

Wanda was one of the first new hires in a new role to help set up this new department and to continue to run it as things were implemented. Wanda was integral to the gathering of the initial courses, implementing the new Destiny registration platform, hiring additional staff, and developing all the new processes. A facilitator, Daniel, was also hired to build the new processes and workflows but the entire project was a lot of work, with long meetings. Wanda provided a lot of input into these new roles and responsibilities, processes and workflows.

Wanda sites the use of SharePoint as the primary, organized, and accessible location for all the course curriculum. A couple of tags or symbols that Wanda refers to are catch phrases that Daniel would use to get them to continue making decisions to move the building of workflows forward. "Is it bigger than a breadbox? Is it fit for purpose?" These are still echoing in Wanda's head sometime later.

Now that the new Director has been hired, things are running much smoother. We are now revisiting processes as we have been able to run through a full year of operations. There has been some evolution in job titles and positions as the department has evolved and grown. Wanda states that, "the SharePoint site and the Destiny registration platform have been real game changers in helping us reach the vision".

Aaron's Value Creation Story

Aaron worked in Employee Services and was in a position to support the hiring of talent during this project. Aaron describes that there was a need "to just go, go, go" and that there was not a lot of discussion. Aaron recognized that the recruiting to non-credit roles was new for them and felt that these new roles were interesting and that, therefore, the work he would be doing would be interesting.

Aaron noticed that many people had applied for more than one position and so he came up with a way to develop interview questions that aligned with the common competencies across all the positions. This provided a lot of efficiencies, so that a person was not interviewed multiple times but rather could be considered for multiple roles during a single interview.

Aaron saw that this new knowledge could benefit him later in a future task or project. He recognized that he now had a deeper understanding that would help in future recruitment opportunities. Aaron was able to apply this learning to his work with other departments in the institution. A new expectation was set on how to consider individuals for more than one role that they may have applied for.

Kierra's Value Creation Story

Kierra holds a position in the Information Technology Services department. She observed two processes happening in parallel. The first was the reorganization of roles to support a new department dedicated to non-credit, and the second was the implementation of a new platform for course registration. She references the past Banner 9 implementation project that left many employees involved "mentally and emotionally scarred".

Kierra recognized the potential value of approaching this platform implementation drastically different. Instead of starting with "this is how this is done", they consciously started

with “how can I help”. They did not want to repeat mistakes from the past, and be too overbearing and rigid.

Kierra describes purposely acting in a way that was collaborative and evolving, in order to be adaptable and flexible. Specifically, not every project needed to run the same, and not every problem required the same solution. She describes working with stakeholders to determine what the desired outcomes of the project were. “Was it optimization, financial, or to make the student experience better?”

The co-chair model of leading the working group that reported up to the co-chaired steering committee was a change in practice and supported departments coming together; it also aligned to a shared vision and purpose to prevent siloed progress. In response to asking for examples of change in practice, Kierra says “we had a lot of people that were convinced every communication had to be documented. And it must be signed by everyone around the table to ensure that people read it and got the message. There was no way that we could keep up with that kind of documentation creation in this schedule that had been laid out. We have been mandated to stand this platform up in half the time it would normally take, and you want us to do twice the amount of documentation? Not a chance.”.

Kierra adds “technology is not the same as it was, even five years ago. So, the practices of how to interact with technology have to be completely unwoven and rethought, and re-woven into a new form of fabric or a new way of thinking about it.” Kierra also says “there is no single answer, there is no single platform, there is no right way of doing anything in the idea of a singularity. Different people work differently, different platforms work for different people, different people communicate better. There are some people who are really uncomfortable and nervous, it actually causes them anxiety to turn on their camera at home. They might be in a

single bedroom apartment with their partner working at the kitchen table. So, if they don't feel comfortable or work productively, and it's not a good place for them to turn on their camera, does it make sense for us to enforce that as a rule that is without exception across the board?"

Kierra saw how the work changed and the workflows changed, enhancing performance and speed of this project. "We developed a shared services model for this platform that we're still using today", stated Kierra.

Griffith's Value Creation Story

Griffith saw that he could offer coaching, in the form of reassurance, to his team members and direct reports that expressed feelings of vulnerability and uncertainty during this time of change. In addition to staff, he supported corporate clients through the change and reminded the institution of the potential unforeseen negative impacts to those corporate clients, such as confusion over who they would be working with.

Griffith reassured staff to be patient, listen, and learn. He describes the staff as wanting to see this change initiative succeed, but he observed folks being overwhelmed because there was so much to figure out and nobody seemed to have the answers. Griffith had received instruction from his supervisor to spend 30% of his time transitioning and supporting staff through this change. He describes the launch of the new platform as the turning point that the future picture started to take shape.

Griffith recognized the angst and stress, and how emotional this change was on staff. He had a lot of conversations where people worried if they would fit in with the new team, would they like their new manager, and a lot of what-if worrying. Griffith did a lot of listening and reassuring. This was the first time that he had experienced this scale of change in his career.

Griffith experiences value through reassuring others and supporting the transition. He describes receiving formal recognition from his own supervisor on his role expectations in relation to this project, and that the role clarity helped him to better assist others through the transition. Griffith was setting up these team members for success in their new work structure.

Mick's Value Creation Story

Mick was an early hire inside the new department. Mick describes the situation as "all hands-on deck" and "trying to make it work with tape and glue". These phrases allude to the chaos of no one having done this before, and creating something brand new. The immediate value that Mick experienced had to do with the fact that he was stretched far beyond his past siloed experience working only within recruitment. Now he was sitting in process planning sessions, and designing all the workflows and team member roles at the same time as standing up a brand-new business unit.

Mick can see now, going into their second cycle of the academic year, that they are starting to get a rhythm. They have moved beyond the initial place of no one knowing what it should look like, what to do, or how to do it. Mick and team members developed a Talent Hub, which is a SharePoint site that was made public and stored all of the information required to do their jobs.

Mick was very clear that his biggest positive outcome was "learning from the leadership styles of those around him". Observing other management styles, both positive and negative, taught him that, "we have to demonstrate how we want everyone to act in this culture". Mick started to see that the desired culture was one of positivity, and opportunity for growth and improvement, which is different than one based on getting the work done.

Adam's Value Creation Story

Adam was able to have senior management recognize that the business processes that had evolved to support credit and non-credit were causing operational issues that needed to be sorted out. Primarily there was a government reporting issue around full-load equivalents (FLEs). Leveraging the institutional strategic direction, Adam was able to impress upon the senior leadership that cleaning up these operational issues would support growth.

Assumptions, and presumably false assumptions, were identified to be holding people back from committing to the project. Adam focused on replacing assumptions with facts, and this helped reduce tensions to move people forward. Moving the non-credit courses and operations to a separate department within the institution, showed people that there was a solution, that they were not losing anything.

As part of an operations focused department, Adam remembers when the fee and reporting structure were updated. Around this same time, his department also went through a full reorganization. Adam reflected that listening, being inclusive, and respectful were key values that he focused on during all of those changes. He relied on being transparent with the facts and communicated often to help stakeholders see how the solutions would positively impact them.

Daniel's Value Creation Story

Daniel was to work with the new hires to put together a framework that would support the design for this new non-credit department. According to Daniel, "we had times where it was tense, because there was frustration, we were moving at such a fast rate". He emphasizes that "it wasn't about having everything figured out. It was about having it good enough to operate".

Daniel worked on defining new terms and creating understanding for members of this new department. He talks about "giving them space to be able to talk about it" and "make it safe for them to not be okay with what we're doing". Daniel discusses leveraging his connections in Wanda and Larry to update the rest of the organization.

Daniel also speaks about the further separation of Corporate Training and Continuing Education in the newly formed Non-credit department that really helped get process clarity and move things forward. He refers to using a Strategic Change Canvas and focusing on what success looks like, above and beyond what's been put in the charter, and really unpacking the vision and the benefits to stakeholders, as well as the challenges. He describes wanting to spend more time on this in retrospect, and that this change has been embedded in his practice now.

Fred's Value Creation Story

Fred was six months into his new role and brought a lot of outside memory into the project that created debates on important issues and tension or conflict. Fred recognized his own ignorance, and strived to learn and understand the purpose of the project. He tried repeatedly to gain access to foundational documents that may have helped clarify the why and purpose of the project. While he was successful in gaining access to the document, he refers to it as gaining access secretly.

Fred was part of a senior steering committee that instituted a co-chair model in governance. This was a change in practice. Fred describes the realized value through performance improvement. The project was launched on time, under budget and realized its two-year revenue target in the first year. Fred defines the co-chair model as the new expectation for running a steering committee.

Neil's Value Creation Story

Neil held a role in the old organizational structure as an Earned Revenue Coordinator and moved into the new structure as a Portfolio Strategist, which was relatively quickly renamed a Product Strategist. His past experience and practice came with him into this new learning space.

Neil describes the early days as "flying the plane as we are building the plane", as they were designing processes for workflows no one had ever done before. He depicts working with new team members and taking a student lens to working through a process beginning to end, piecing it together and writing it all out so the whole team has it as a resource to guide their practice.

Neil recognizes that processes are getting easier now that they have been through a full year cycle. He also mentions having the support of his supervisors to work with the schools for ideas for their areas and content focus.

Barb's Value Creation Story

Barb recognizes that the strengths of this project were the budget, the resources, and the executive sponsorship that supported the execution of moving the project forward in record time. The weakness of the project was the singular voice pushing forward the solution, with no dialogue to approach it more systematically. This triggered a past outside memory of negative outcomes when a project proceeds in this manner for Barb.

Barb was able to voice this concern. This was a turning point for Barb's commitment to the project and trust in the leadership of the project. Barb felt like another colleague had thrown members of her team under the bus. Barb handled the feedback poorly and had an outburst that she later apologized for. However, the incident opened a new level of safety and trust in the working relationship.

Barb had a negative encounter with a colleague where Barb was uncharacteristically blunt and direct. Barb later received feedback that this was unprofessional from a senior leader. Going back to dialogue further with both the colleague and the senior leader, Barb describes this as a turning point for her personally. It is memorable and transformational for her in a positive way.

Barb observed leadership growth in others involved in the project. She built trust with key stakeholders that transformed her working relationship with them to this day. She feels more listened to and that she has earned her seat at the table now.

Learning Value of Network

As previously described, the data collection tool used was the promoting and assessing value creation in communities and networks conceptual framework. The creators of this tool, Wenger, Traynor, and de Laat, write about the connections in a network and how they function to provide access to information flows. The authors go on to state that the access within a network can be intentional or serendipitous, as "learning in a network does not have to be an explicit collective dimension" (2011, p. 11). The findings provide evidence of information flows and that learning has occurred in this network.

The collective value creation story in Figure 8 compiles the themes identified across the individual value creation stories. It is striking that personal and professional growth or changes were the most common; the highest value for the individual participants and the whole network benefits from the sum of those personal and professional changes. A recognition of social change as important was significantly lower and almost no recognition of leadership changes as

holding value. Upon reflection, this lends itself to the age old "what's in it for me?" as holding the most value for individuals to participate in a change initiative.

Summary of Chapter Four

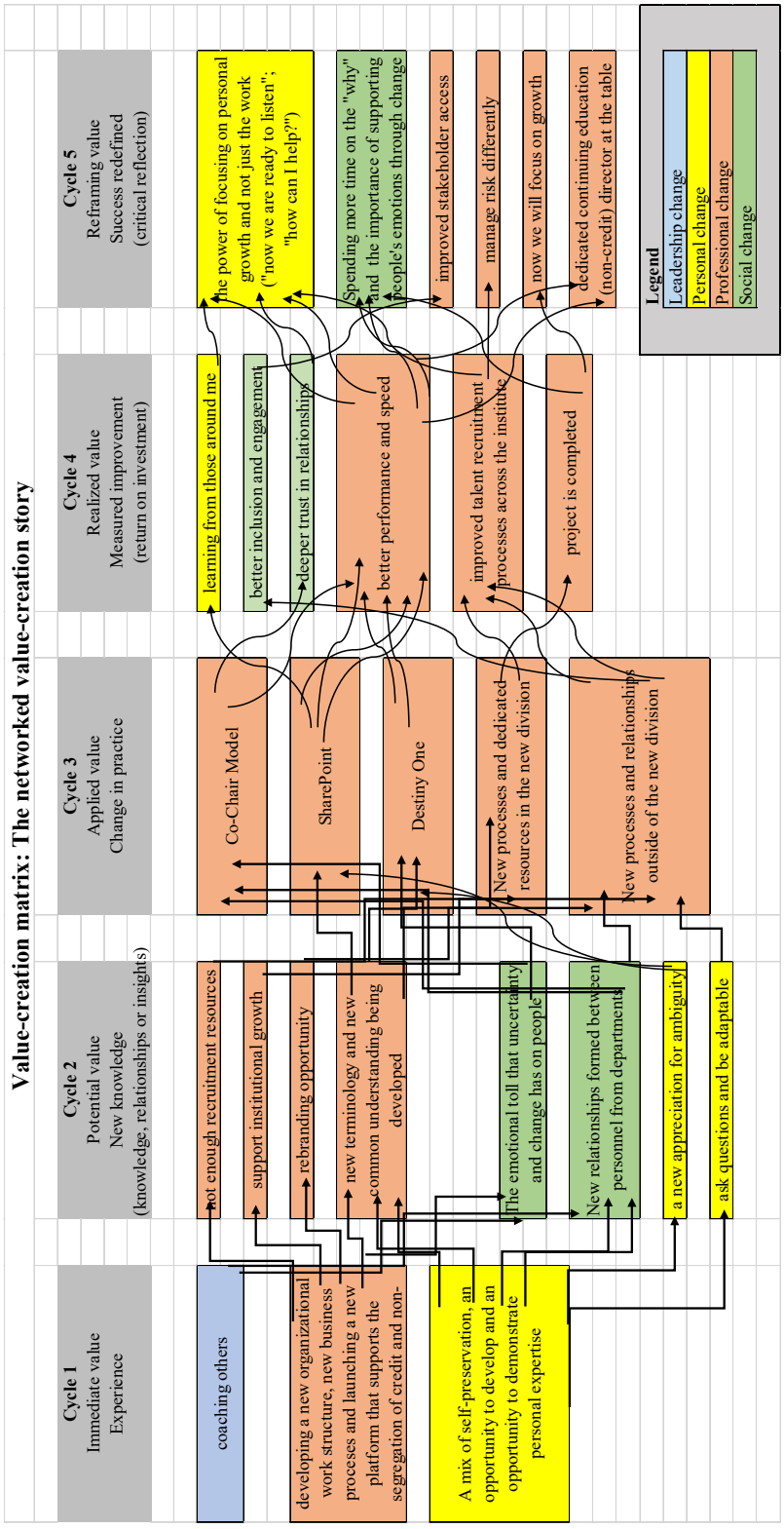
In this chapter, I have presented the findings. A network of relationships was not a planned output, but as the narratives continued, the network revealed itself. The network of relationships is an outcome of creating adaptive space and will be elaborated on in the next chapter.

Thematic coding generated five global themes. Findings that illustrated each of the five global themes were provided in this chapter. The various interplays between the six organizing themes were highlighted briefly, and should spawn thoughts for future research opportunities.

Chapter Five will provide a deeper analysis and discussion of the five global themes. The next chapter will also use the findings to answer the original research questions and highlight the contribution this case study has made to both leadership theory and practice.

Figure 8

Value Creation Matrix



Chapter 5: Analysis and Discussion

"When things bump up against each other, they fundamentally transform each other."

– Dr. Mary Uhl-Bien –

The previous chapter highlighted my research findings, explored the thematic analysis process in depth to describe how the basic themes and organized themes, where global themes were arrived at to answer the research questions. Five global themes emerged through the process:

1. Adaptive space in the physical space
2. Understanding as a strange attractor
3. Maintenance of networked relationships
4. Missed opportunities to leverage adaptive tension
5. Memory as a catalyst/inhibitor in information flows

This chapter elaborates on each of these five global themes and how they provided evidence as to how leadership is enacted, experienced, and valued during a value co-creation process, the central question that guided this study. Descriptions of each of the six enabling leadership practices (linking up, creating bridges, leveraging adaptive tensions, influencing with tags and attractors, creating simple guidelines, and network closure) along with a brief discussion of the similarities and differences, as defined by Uhl-Bien and Arena (2017), follow. Next, a thorough examination on what the value creation stories revealed about adaptive space and the desired outcomes of adaptive space are postulated. Lastly, I discuss what all of this means for leaders working in higher education and pursuing educational reform initiatives, and what are the implications for leadership theory and practice.

Five Global Themes

This study was designed to explore how leadership is enacted, experienced, and valued during a value co-creation process, or change initiative, in order to positively contribute to leadership theory and practice, in hopes of advancing education reform in higher education. The thematic analysis revealed five global themes that demonstrated the interplay of the six enabling leadership practices to affect change and progress a project through to completion. Each of these will be discussed in the following sections.

Adaptive Space in the Physical Space

Complexity Leadership Theory talks about adaptive space, but it does not provide a description of where one finds adaptive space in relation to the physical space we operate within. Analysis of the findings clearly point out that people create adaptive spaces (Uhl-Bien, 2021). Systems, processes, and technologies act on adaptive spaces, but they do not create adaptive spaces (Paananen et al., 2022; Uhl-Bien, 2021). Upon further analysis of the findings, elements that are required to enable the creation of adaptive spaces began to reveal themselves. These will be detailed in an upcoming section. For now, I will discuss only the physical space.

This global theme must be evaluated through the contextual lens of the global pandemic. The local government's response to the global pandemic created new physical spaces for working that were non-negotiable. The unprecedented disruption this caused on how a project team could interact with each other cannot be understated. The polytechnic campus closed its doors to all in-person interactions on March 18, 2020, and enforced a mandatory work from home policy. This emergency situation added a contextual factor that makes this case study improbable to replicate and so the implications for leadership practice need to be carefully viewed through this lens. This mandatory new physical space to work in created non-negotiable

boundaries for adaptive spaces to form. This certainly impacted the creation of adaptive spaces as it is extremely rare in higher education environments to receive an immutable and absolute directive such as this. It is also important to note that this institution was not unique in their response to adopt emergency remote measures (DeCarlo, et al., 2022; Weidlich & Kalz, 2021). However, these boundaries provided simple rules for the agents to operate within.

The physical office space changed from a typical Canadian polytechnic campus to that of your home. Some people worked out of a home office, but many worked from their kitchen table or bedroom, trying their best to manage the new distractions and challenges that came with working from home (DeCarlo et al., 2022; Sjoblom et al., 2022). Some participants described an increased sense of safety being in their home. They felt this fostered a more open, and honest dialogue with their colleagues and project team members. Others described a sense of invasion of privacy and feeling less safe trying to be effective on a video MS Teams call; they did not like the mixing of home and work in this new manner. This change in physical space impacted communication and information flows (DeCarlo et al., 2022; Sjoblom et al., 2022; Weidlich & Kalz, 2021).

In addition to the change in physical space, technologies, specifically online synchronous and asynchronous communication tools, acted in adaptive spaces to increase the frequency of information flows (Bond et al., 2021). This was experienced positively and negatively. The increased frequency of open, honest dialogue when people feel safe acts to accelerate project progress (Klusman, et al., 2022). However, the increased frequency of information flows acts to magnify conflict when people are not feeling safe. Previous to the pandemic, the use of online communication tools was rare in this institution. Few departments had Jabber on their desktops, but MS Teams, and the use of the MS Teams chat feature, became organizationally universal

within a very short amount of time. Fairly quickly, the organization gravitated towards MS Teams as the platform after some early experimentation with Zoom. MS Teams enabled speed of interactions, but it also amplified conflicts. Conflicts left unaddressed quickly became larger issues due to the speed with which unproductive and harmful interactions could take place. This finding reinforces the importance of addressing conflict to leverage adaptive tension. The role of safety in creating adaptive spaces can be summarized as follows:

1. Information flow frequency + safety = accelerated project deliverables
2. Information flow frequency + no safety = magnified conflict

Therefore, based on the research findings, adaptive spaces need to contain the following elements: space in the form of time, psychological safety, information flows, and clear boundaries. Uhl-Bien (2021) validates these findings when she speaks about the concept of generative emergence, the process in which dynamic systems create new order in adaptive spaces. Adaptive spaces are augmented by the frequency of information flows, lack of understanding, and agent memories. The implication for leadership theory is a more thorough description of adaptive space in relation to the physical spaces that we work within. The implications for leadership practice are that enabling leaders need to ensure their team members feel safe, and reiterate the importance of identifying and addressing conflict to leverage adaptive tension for successful education reform.

The enabling leadership practice of creating simple guidelines was present in this organization, but presented itself very differently than the leadership literature had me believing it would. Right or wrong, the interview questions were framed to uncover written formal documentation that would provide evidence of expectations on how project team members

should be interacting in the daily work, and indicate guidelines for how decision making would be completed. Reflecting back on my method of preparing the interview questions, I was seeking a project handbook, employee guide, or references to a digital book or website. The participant answers indicated, unanimously, the lack of and complete disregard for requiring or creating any written rules or simple guidelines. This was certainly a surprising finding.

According to Uhl-Bien and Arena (2017), creating simple guidelines will enable individuals within the organization to engage in behavior that supports the desirable complexity dynamics like information flows, linking up, and network closure without them requiring any knowledge of CLT. I had postulated that creating these simple guidelines would be led by project team members but would need to be edited and modified based on feedback from the larger polytechnic community to ensure that they were resonating with all levels of the institution. These simple written guidelines did not exist but the project certainly progressed. Upon reflection, I see that my definition of simple guidelines, my mental model, was very narrow. I have lived and observed a very strong culture in this institution. It is a unique blend of clan culture, very people oriented and friendly, with market culture, highly competitive and results focused (Cameron & Quinn, 2006), yet lacks discipline to accurately measure progress. For staff that stay as long-term employees, you can see the institutional values in their behavior, and for staff that only remain employed for a short amount of time, you can observe their struggle with adapting to be effective within the organizational culture and predict their exit from the organization. The evidence suggests that perhaps simple guidelines do not have to be written down. Perhaps they live in the people and are passed on through the people. These simple guidelines are a series of micro-interactions that play out in coffee chats, meetings, virtual chat channels, and emails. They exist, even if they are not observable in one central location that can

be referenced in writing. Therefore, adaptive space in the physical space is created by people, by leaders. It is still an ambiguous concept, but this case study does provide findings that contribute significantly to the concept of adaptive space.

Understanding as a Strange Attractor

Understanding is a strange attractor. Understanding channels emergence. As stated previously, strange attractors are the paths that complex adaptive systems take which allow them to operate far from equilibrium and scale more challenging situations to reach new levels of performance (Boal & Schultz, 2007, p. 413). Strange attractors represent a path of innovation, which is in sharp contrast to attractors that represent the default choices that agents make that keep the organization running as it always has (Goldstein et al., 2010). It is impossible to predict the future direction of a strange attractor. If understanding is a strange attractor, it is impossible then to predict what barrier is preventing it from a path of innovation, or a path of increased understanding. The barrier, or reason for a lack of understanding, does represent the default choices that agents make that keep the organization stagnant, or prevent it from adopting change, or in this case, advancing education reform. A leader cannot predict what a collective will do with more information and a deeper understanding of that information, which may explain a common leadership practice where information was guarded and shared only on a need-to-know basis with select people. Anyone who has been a follower can attest to the frustration experienced when your leader appears to not be transparent.

This case study generated findings that show that a lack of understanding starts to negatively impact information flows. When adaptive tension is not leveraged, when the dialogue stops, one should not assume the conflict has been resolved. The research revealed the following reasons for a lack of understanding:

1. The agent is fearful to ask. The work environment does not provide psychological safety to ask questions that would help to advance the agent's understanding.
2. The agent is actively digging for understanding and cannot get answers, the documents are not available to every position, or the business case is not clear, or they just cannot get the business case to make sense to them.
3. The agent assumes that no one else understands either, so they choose to remain silent.
4. The agent is so new in the organization or project that everyone is confused, so they have to spend a lot of time building that understanding together, which takes time away from the day-to-day operations.
5. The agent has past memories, either toxic institutional memory or outside institutional memory, that is impairing their ability for understanding in the current project.

Therefore, enabling leaders need to ask questions to uncover and resolve lack of understanding. This is a worthwhile leadership practice because the findings also indicate that increased understanding supports deepening of existing relationships and the formation of new relationships, which could also be called collaboration. As previously stated, value co-creation is a distinct form of collaboration whose purpose is innovation (Ballantyne & Varey, 2008). Upon analysis, it appears that understanding is a strange attractor, a key element for collaboration and essential for innovation to occur.

Maintenance of Networked Relationships

In the findings chapter, the weighted difference between the entrepreneurial and operational systems of the organization was noted in Figure 7. The interviews revealed many more roles in this polytechnic associated with operations than with entrepreneurship. This may

be an indication of the rigidity of the hierarchical structure despite the institutional prioritization of revenue generating ideas and concepts that the entrepreneurial system is responsible for generating. This observation aligns with the traditional views and structures of post-secondary educational institutions in Canada.

During the literature review it was noted that enabling leadership is new to the leadership lexicon. The Complexity Leadership Model contains three types of leadership. This polytechnic institution has structures that we can easily define as operational or entrepreneurial, but it does not have departments or reporting structures that can be easily identified as enabling. In Figure 7, the adaptive space, the continuum of where operational and entrepreneurial meet up, either by activity or event, is where the agents that exhibited enabling leadership actions were mapped to. When analyzing the interview responses, the network map was built on activities and interactions the different agents had with one another. Individuals who had been referenced as a network closer were also mapped more centrally into the adaptive space. Agents who were connected to many other different agents were also mapped into the adaptive space as they seemed to be creating bridges and facilitating more information flows than others. Certainly, those agents were acting very independently of job title and appeared to be acting in a manner that energized the network connections more holistically.

The concept of reciprocity was evident in how participants described maintaining their newfound work relationships (McGregor & Marker, 2018). There was a mutual benefit that outlasted the project and supported the goals of the organization. Three examples were discussed in the findings chapter, and each relationship was maintained through a positive feedback loop of brokerage and linking up. In Indigenous ways of knowing, reciprocity is more than just actions, it is a stance that may produce greater equilibrium and congruence between

agents (McGregor & Marker, 2018). There is complementarity between the two theoretical positions, CLT and reciprocity in Indigenous educational research that warrants more exploration.

Missed Opportunities to Leverage Adaptive Tension

The findings indicate that adaptive tension is for the most part invisible. Adaptive tension exists inside frustration, conflict, and moments of silence. The participants were able to describe in detail, occurrences where they themselves fell silent or observed the collective group becoming less talkative, and this was taken as agreement or compliance, which is a missed opportunity to address adaptive tension. Enabling leaders can better serve a project by checking in with all participants and finding ways to safely continue dialogue.

Further reflecting on the findings indicate that agent memory could be a plausible source of the adaptive tension that individuals experienced, so linking these two global themes. This will be discussed in more detail in the next section.

Memory as Catalyst/inhibitor on Information Flows

As stated in the findings chapter, memory plays an important role in brokerage of information flows or creating bridges. The evidence generated from this case study indicates that memory can be a catalyst or it can be an inhibitor of a change initiative or project moving forward. The case study also revealed three main sources of memory. For the purposes of analysis and discussion, I have named these as inside memory, outside memory, and absent memory. All three of these memories can be either toxic and act as an inhibitor to information flows, or they can be safe and act as a catalyst to improving and or increasing information flows. This is outlined in Table 4, in Chapter Four.

Upon deliberation, it may be that adaptive tension is for the most part, agent memory. If it is, then we can start to see how enabling leaders can better leverage adaptive tension. So, if enabling leaders can adapt their practice to purposely and safely uncover agent memories, then this may have immense positive impact on projects progressing, change initiatives, and education reform.

Revisiting Figure 3, the conceptual framework for this study, the completed research contributes two additional elements that assist to explain how interactions work to advance education reform. The first element is understanding as a strange attractor. At the one-to-one interaction level, dialogue is the vehicle to increase understanding. As depicted correctly, this is not a linear experience, rather, an unpredictable and sometimes messy experience. In order to increase understanding, one needs to commit time and effort to interacting with others, with the systems, and with oneself. Analysis of the findings indicates that when an individual increases their understanding, their commitment to progressing the project also increases. Collectively, if more people have a deeper understanding of the change or project, this aligns with successfully progressing education reform.

The second element is memory. Memory is the retainment of the event and the digestion of the impact of that event on oneself. Memories are unique to individuals and malleable. They are adaptive systems themselves. Through dialogue, the memories can shift from an inhibitor to a catalyst, acting on the strange attractor and understanding, to change its path. Through interactions, most importantly dialogue, we can observe the path of the strange attractor of understanding. As the interactions continue and as we move through time, memories act to inhibit or catalyze our understanding, which in turn informs our actions that contribute to a project or change initiative.

This analysis paints a picture of leadership that demonstrates the paradox between systemic change and individual agency. To achieve systemic change, we need to be acutely in tune with our personal agency to be an effective contributor to the collective systemic change. Despite leadership's perhaps false focus on leading others, at best we can only create adaptive spaces that allow individuals to embark on their own personal journey. With this revelation in mind, the next section highlights what the findings indicate for creating adaptive space.

Creating Adaptive Space

I have already discussed what the adaptive space may be in relation to the physical spaces we work in. Analysis of the research findings indicate that adaptive spaces need to contain the following elements: space in the form of time, psychological safety, information flows, and clear boundaries. Adaptive spaces are augmented by the frequency of information flows, lack of understanding, and agent memories. Now I will focus on what the findings imply for enabling leaders to be able to create adaptive spaces.

Arguably, the data indicates that the most important practice an enabling leader should develop is how to create and maintain adaptive spaces. If the adaptive space exists, then the agents are enabled to behave in ways that allow for increased understanding, which leads to innovation and productivity. Participants mentioned three desirable outcomes from working on this project. I have inferred that these desirable outcomes were derived from operating inside an adaptive space. These outcomes from adaptive space include learning in the form of personal transformation and growth, new networked relationships that had not existed prior to the project, and physical innovations in the form of new processes, products and systems. The upcoming section analyzes the value-creation stories that captured these desired outcomes of adaptive space

in order to tease out how leaders can go about creating adaptive space to fuel collaboration, innovation, and inclusion.

Personal Transformation and Growth

In the participants' own voices, personal transformation and growth was mentioned the most often, and with the most favorable language, indicating its high value as an outcome of participating in this project. Events referenced as contributing to their own personal transformation and growth include participating in the co-chair model, co-creating a shared vision and purpose, assuming your colleagues have best intentions, and learning from those around them. Although agents may want to contribute to large change events, not everyone is going to understand the big picture or maybe even agree with it. The findings indicate that education reform can be helped along when agents involved in the large change event are provided experiences, coaching, support to enter an adaptive space, and opportunity to pull out for themselves autonomous personal growth. It was very interesting that some of the most valuable personal transformation stories involved watching a colleague's personal transformation through the project. The excitement and joy of observing another's growth appeared to be as valuable as one's own.

Enabling leaders can begin to create adaptive spaces by providing space and time to reflect on their own personal transformation and growth. By modeling this critical leadership action for those around them, it may encourage others to embark on a similar journey for themselves. Enabling leaders can then continue to grow and support adaptive spaces through acts of mentoring, coaching, and empowering other agents to engage in reflection.

New Networked Relationships

Participants often cited that new relationships were an important outcome of participating in the project. Participants described the two-fold value of these new relationships. The first was that the new relationship eased the task completion inside of the project itself. That is to say that the project provided an opportunity to build a new connection that didn't already exist and work was being completed in a new way. The second was the initial connection facilitated an ongoing, deepening interaction that outlived the project and new tasks were being completed together that were of benefit and value to the institutional strategic direction. This is to say that these new relationships were facilitated by the needs of the project, but their usefulness extended far beyond the life of the project.

The relationships described were always connecting with a new person who was outside of their direct reporting structure or work group; thus, there was no requirement to interact according to any reporting structure lines or project team membership. It appears that the needs of progressing the project drove the initial desire to interact, and that the agent had an advanced understanding of the needs of the project to initiate this interaction. Notable networked relationships were built between ITS and Marketing, Employee Services and the Non-credit talent team, Employee Services and Finance. These were new relationships that were born as a result of this project, and have extended their usefulness and impact far outside the scope and time constraints of this project.

The data indicates that adaptive spaces can be created through events that facilitate interactions between departments and divisions of an organization, and by increasing the understanding of individual agents that will seek out these interactions. Enabling leaders can create adaptive spaces by providing purpose and shared vision that illustrate why an interaction

between seemingly unrelated areas may serve the institution or project. Modeling these networked interactions, seeking out purposeful conversations with agents outside your direct reporting lines, and project team membership by enabling leaders should encourage other agents in the organization to feel safe and empowered to do the same.

Brokering Innovation: Creating Bridges for Linking Up

The participants also mentioned new innovations in the form of processes, products or systems. Some of these innovations were embedded as a desired outcome from the project charter and executive sponsors of the project and so, though the participants would agree that the new system was better than the old system, it was not apparent it held as much value as the personal transformation and the new relationships did. The interviewees described these innovations as less important than their affinity for the improved human connections and improved information flows that these processes, products, and systems fueled. A few examples from the interviewees include a facilitator tool called a Strategic Change Canvas, a new SharePoint site called the Talent Hub, and the adoption of new platforms, like Lever, for hiring, and Destiny One for student course registration. Each will be discussed briefly.

A Strategic Change Canvas is a facilitator change management tool that captures the vision, benefits, and challenges for the group, all in a one-page document. It focuses on what success means for the group, beyond the project charter or the executive sponsor's mandate, and highlights what success looks like as a project unfolds and evolves. It is a tool for change managers to continually check in with the group to ensure alignment with the project goals. I think it is important to note that when the interviewee was describing the importance of this innovation to their ongoing practice, the tool was a means to build better team dynamics, again, a human outcome.

Another, a new SharePoint site called Talent Hub was created, which came to house all the onboarding documents for new educators and anything employees need to know when they first start, like accessing Brightspace, using Zoom, and entering grades. The Talent Hub has two sections worth noting. The first is a professional development section for more seasoned educators to the institute that allows access to additional training and support to enhance their teaching methodology and practice. The second is a business process section to help employees with travel policies and reimbursement processes. When the interviewee described the usefulness of this Talent Hub, it was all about better information flows for new employees and to assist the team with the volume of inquiries that they could not manage without this tool in place.

New systems that came on board were the adoption of a new recruitment and hiring software program, called Lever, to assist with increasing the talent pool and the new non-credit course registration system, Destiny One, to ease student registration processes. Both systems improve information flows. Lever improves the flow of information to the new talent being hired and everyone involved in that process. Destiny One improves the information flow to new and returning students as they complete the registration process.

Enabling leaders need to be aware that new innovations in the form of processes, products or systems, are a means to better information flows and enhanced human connection. Enabling leaders use technology, systems, and processes to create adaptive spaces where they and their colleagues can thrive. Processes, products, and systems do not create adaptive spaces, they are an outcome achieved by people working in adaptive spaces. Enabling leaders should model the use of processes, products, and systems to improve human interaction and encourage others to do the same.

Rich Descriptions

One of the sub-questions posed, in order to guide the data generation and analysis of this research study, was how similar or different the participants' experiences would be in their own words, to the six enabling leadership practices as defined by Uhl-Bien and Arena (2017). Explicit practitioner definitions for each enabling leadership practice are proposed in this section, along with a brief discussion of the similarities and differences to the original definitions written by the authors.

Brokerage

Brokerage is any action of an agent that provides opportunity for agents to link up (Uhl-Bien & Arena, 2018). Every time the participants came together as a member of one of the project steering committees or working groups, that was a brokerage event that enabled individual agents to go back to their teams and working groups to elaborate further on the ideas or tasks that came from the initial brokerage event. Through this action, bridges were created and information flows occurred more readily, which led to increased linking up. This case study generated evidence that aligned with this enabling leadership practice.

In practice, and through the analysis of the data, the term that seemed more appropriate and had more application was information flows. Information flows became synonymous with brokerage. They provided the opportunity for agents to link up. Information flows were not necessarily the action of the agent; however, enabling leadership needs to empower the autonomy and sustainment of project teams to work effectively independently of the leader. As a result, information flows also align more strongly with distributed control, a key tenet of complexity leadership theory. As seen in Table 7, suggested practitioner definitions have been created for the six enabling leadership practices.

Leveraging Adaptive Tension

The evidence suggests that there are many more opportunities for agents to leverage adaptive tension than they are actually taking advantage of. Most likely, this is because adaptive tension is a difficult phenomenon to observe; hence, it is important to initiate dialogue with agents to bring the adaptive tension into a space so that agents can continue to develop this enabling leadership practice. The evidence indicates that a way to enact this is through dialogue, bringing awareness to the concept of psychological safety and the role each person plays in positively contributing to a safe environment. Silence is not an indication that conflict has been resolved, nor that understanding has been achieved. Agents also need to be aware that conflict left unaddressed can be amplified in settings that rely heavily on technology such as Teams and where face-to-face interactions are not possible.

Linking Up

Linking up is the commonality agents find that allows them to bond in relationships and networks, and occurs when interdependent agents have enough commonality to combine ideas and efforts in ways that trigger novelty and amplify emergence (Uhl-Bien & Arena, 2018).

Tags and Attractors

As previously stated, a tag is a symbol, event, person or piece of information that enables an aggregation process (Uhl-Bien & Arena, 2017, p. 11). Uhl-Bien and Arena (2017) go on to state that an attractor pulls a dynamic towards it. In this case study, the findings indicate that a tag is a memorable catchphrase that inspires agents to act. This observation of how tags were used has elements of a mechanistic worldview more so than an ecological worldview, but seeing how the tags can be used as an input to the attractor, is a new way of looking at how we use language to change behavior. An attractor represents the split in the pathway that can maintain

status quo or foster innovation. A strange attractor is the unpredicted, innovative path. Enabling leaders need to be open to the unexpected in order to see opportunities.

Table 7

Title and Definition Comparison of the Six Enabling Leadership Practices

Uhl-Bien and Arena definitions	Enabling Leadership Practitioner (ELP) definitions and values
Brokerage is any action of an agent that provides opportunity for agents to link up (Uhl-Bien & Arena, 2018).	Information flows are essential to provide opportunities for agents to link up (Bond, 2022). ELP Value: communicate often and openly.
Leveraging adaptive tension increases or decreases the level of conflict to be creative enough to move away from status quo but not so tense that the system is distressed (Uhl-Bien & Arena, 2017).	Identifying tensions and addressing them to increase understanding is a critical opportunity for enabling leaders (Bond, 2022). ELP Value: embrace conflict for learning.
Linking up is the commonality agents find that allows them to bond in relationships and networks, and occurs when interdependent agents have enough commonality to combine ideas and efforts in ways that trigger novelty and amplify emergence (Uhl-Bien & Arena, 2018).	Linking up is the commonality that results in novelty (Bond, 2022). Value: foster connections through dialogue
A tag is a symbol, event, person or piece of information that enables an aggregation process and an attractor pulls a dynamic toward it (Uhl-Bien & Arena, 2017, p. 11).	A tag is a memorable catchphrase that inspires agents to act and an attractor represents the split in the pathway that can maintain status quo or foster innovation (Bond, 2022). Value: Expect the unexpected
Simple rules are all about creating simple guidelines to guide how agents behave that will enable the network and support complexity dynamics, all without any agent requiring knowledge of complexity theory (Uhl-Bien & Arena, 2017).	Simple rules provide the clear boundaries to say good-bye to past practice, to make space for new patterns of working together to take hold (Bond, 2022). Simple rules may or may not be written and agents may or may not be able to articulate the rules. Value: Design systems for collective impact (not individual whims)
Network closure is an action an agent deploys that uses reputation and gossip to get attention	Network closure is the informal communication channels, independent of role

and the support of sponsors (Uhl-Bien & Arena, 2017).	and status, that influence project progress (Bond, 2022). Value: People progress change not systems (people first)

Simple Rules

Simple rules are all about creating simple guidelines to guide how agents behave that will enable the network and support complexity dynamics, all without any agent requiring knowledge of complexity theory (Uhl-Bien & Arena, 2017). Simple rules provide the clear boundaries to say good-bye to past practice that make space for new patterns of working together to take hold. Enabling leaders need to design systems and processes for collective impact, not give into individual whims. However, enabling leaders also need to recognize that people will talk about and remember the "what's in it for me?" aspects, and not necessarily be able to articulate or see the collective impact. The enabling leader must accept this fact and decide how much collective communication is required to advance understanding that keeps a project moving forward and balance the need to embrace the individual narratives regarding wants and needs to also advance the project. This is another inherent paradox inside the process of leadership.

It was also apparent that in this case study, there was a low emphasis on simple rules formalized and put in writing. It was unclear if they were not needed, not deemed important or that there was not enough time allocated to such an activity. The concept of simple rules is ambiguous. The findings indicate that the necessity of having simple rules in writing may or may not be as important as originally proposed.

Network Closure

Uhl-Bien and Arena (2017) refer to network closure as an action an agent deploys that uses reputation and gossip to get the attention and the support of sponsors. They go on to state

that an agent exercising network closure allows others to make the sale for them. The participants in this case study were asked to identify an advocate of the project and many of them pointed to the same individuals, indicating that this enabling leadership practice is visible and recognizable.

Network closure is the informal communication channels, independent of role and status, that influence project progress, workflows, and change management. This case study was of an organization that is much more people driven, than process driven. In some aspects of how influence and trust are built throughout networks, this informal influence can be the dominant method for how work is completed. To be effective, enabling leaders need to be acutely aware

Impact on Leadership

The findings in this study offer numerous insights into leadership theory and practice, particularly in higher education. Contributions to leadership theory and leadership practice are discussed below.

Contributions to Leadership Theory

This study was largely based on the thematic construct of Complexity Leadership Theory as a paradigm shift in leadership practice. Uhl-Bien and Arena (2018) put forward a Complexity Leadership Model that focuses on enabling adaptability based on a decade-long research and practice partnership. This case study focused on the enabling leadership practices within their complexity leadership model. The findings were compared to their definitions.

Overall, the findings from this case study provide supporting evidence for the six enabling leadership practices identified by Uhl-Bien and Arena (2017). The findings offer some

additional context and application of the theory to refining the use of the strategies in reflective practice.

Contributions to Leadership Practice

The central question guiding this study was, how is leadership strategy enacted, experienced, and valued by agents, during the interactions that take place in a value co-creation process, in a polytechnic in Canada? The enactment of leadership strategy speaks to the doing. Specifically, completing the tasks, participating in the meetings, executing the planning, and scheduling through actions and interactions. The experience of leadership strategy speaks to the thoughts an agent has before, after, and during the doing. The experience is also the thoughts an agent has as they observe others in the network doing. The value of leadership strategy is a deeper reflection that occurs after the events of doing. It involves thoughts and feelings, and processing of the events in relation to the outcomes achieved or not achieved. The PAVC tool used to analyze the value of leadership strategy showed that agents are able to identify the personal and professional change value at a much higher frequency than either the social or leadership change value. This was illustrated in Figure 8 in Chapter Four. Upon further analysis, this provides evidence and an important reminder for leadership practice that people leading change initiatives will need to create space for the team members to self-identify what's in it for them before they can further reflect and understand the social value and the social impact that their collective actions can have to advance education reform. Leaders need to enable these discussions to take place because understanding is an attractor that accelerates and supports education reform.

Arguably, the most important finding from this case study and largest implication for leadership practice is the critical importance for enabling leaders to create adaptive space.

Adaptive space allows all participants to become enabling leaders and contribute to growing, and maintaining the adaptive space. How do the participants, through interactions, accomplish creating an adaptive space? Some of the ways the participants describe the adaptive space are as follows:

- License to push boundaries
- Permission to let low priority items burn (direct supervisor to reports)
- Space to make decisions (peer to peer; supervisor to report; report to supervisor)
- Freedom to contribute (peer to peer; supervisor to report; report to supervisor)
- Admission of errors when the decisions did not turn out the way they had planned
- Safety to fail (peer to peer; supervisor to report; report to supervisor)
- Comfort in knowing, "It doesn't have to be perfect."
- Autonomy to figure it out and simplify as you went
- Ability to submit work you were not sure if it was done the way others would want to see it done
- Questioning everything in order to learn (peer to peer; supervisor to report; report to supervisor)
- Increase in understanding of the big picture (peer to peer; supervisor to report; report to supervisor)
- Circling back on misunderstandings – increased information flows – admitting, "I should have told you that, I wasn't hiding it, just things moving so quickly."
- Difficult to identify one genius. The work was very collaborative and fair. Both decisions and ideas were really from many people's input.

- Project momentum was described when minds were open (peer to peer) versus project stagnation was described when memories were negative and acting as barriers (peer to peer).

Analyzing the voices of each participant shows that the individuality within a collective is worth paying attention to, as it highlights how the same experience is viewed very differently from person to person. Enabling leaders need to uncover these differences before they can identify accurate commonalities that will support adaptive spaces. A commonality uncovered in this study is that enabling leaders need to create spaces where each participant can enact their own leadership strategy, within appropriate boundaries, so that they can experience the project in a way that brings personal value to them. Within an ecological worldview, this makes intuitive sense and the findings substantiate this worldview (Capra, 1996).

Summary of Chapter Five

The global themes revealed rich implications for higher education leadership practice. The Complexity Leadership Model has been enhanced with this new knowledge on the interplay of the six enabling leadership practices.

The global theme of adaptive space in the physical space is an interplay of information flows and simple guidelines. The global theme of understanding as a strange attractor is the interplay between information flows, network closure, and the use of tags and attractors. Whereas with the global theme of maintenance of networked relationships, the data revealed a strong interplay between information flows, linking up, and network closure. Both global themes of missed opportunity to leverage adaptive tension and memory, acting as either a catalyst or an inhibitor, were the strong interplay of the organizing themes of information flows, linking up, and adaptive tension. The presence of information flows within all five global

themes speaks volumes to the importance of communication in change management. The implications for leadership practice in higher education are abundant. This body of work offers practical and informative to their personal leadership practice. I relish the completion of this case study, culminating a credible body of work that impacts leadership practice for other polytechnic leaders.

In Chapter Six, the final chapter, I will share my own value creation story and concluding thoughts. The significance of and any gaps in my research will be delineated, along with a brief discussion of future research opportunities to address these gaps.

Chapter 6: Conclusion

"Vulnerability is not knowing victory or defeat, it's understanding the necessity of both; it's engaging. It's being all in."

– Brené Brown –

In this chapter, I provide my own value creation story as it relates to the blended learning project in this case study. I share the transformational impact this doctoral research has had on my own leadership practice. I also contribute my final thoughts on the significance, the limitations, and the future research opportunities for anyone brave enough to embark upon the Complexity Leadership Theory journey.

Reva's Value Creation Story

I am both a researcher and a leader at the polytechnic institution in this case study. Both roles are intimately woven throughout my experience in this blended learning project.

An immediate value for myself within this blended learning project was the institutional exposure I gained having access to a much larger pool of employees as the reorganization goals began to take shape. I was in meetings and planning sessions with leaders from across the institution that I had little to no interactions with previously. Through thoughtful dialogue and listening to understand, bringing past experiences into this new learning space served as a series of stepping stones for myself.

The potential value of this knowledge capital started to reveal itself. Living in a state of possible was addictive. The failures I encountered were celebrated and drove internal growth.

This was in large part because of the support of my direct leader and their intimate knowledge of my dual role.

The applied value and changes in practice came later with maturity. A change in practice requires an awareness of lack of skill. I had to be humble enough to recognize that I had no experience in an institutional reorganization. Accepting feedback and hearing it for the wisdom it contained was painful. Change is painful, but it leads to real growth. I engaged in new collaborative arrangements, leveraged new connections, and began to implement the advice and newfound expertise I had access to. This required discipline and structure. I got in touch with my values. I was ferocious with transformational focus. I focused my efforts. I focused on my relationships. I focused on my actions. And I still had failures.

Realizing value through performance improvement requires seeking out feedback. It requires accepting the hard to hear feedback. Hearing feedback is uncomfortable. Accepting feedback is downright painful. But this was a must to overcome failures and take leadership to the next level. Not attaching judgement and not assigning value labels assisted in performance improvement.

Today, I have reframed value and redefined success. I have a whole new set of expectations on what is possible, far beyond my own personal growth, and more on society as a whole. Today, I have profoundly different conversations with stakeholders and seek out involving new stakeholders. I look for people that do not look like me. I want to learn from them, I want to co-create with them, and I want to transform the world through connections with them.

Success was to see the reorganization of the divisions through to completion, and to enable the institution to increase the revenue that the non-credit educational programs contribute

financially. Now success is to actually enable the new systems, processes and talent to create an adaptive space that supports ongoing innovations in non-credit delivery. The success would be to build relationships that connect ideas and resources to enable sustainable change. The immediate value was about the task completion. Now the value is the power of life-long learning, both inside the organization and as a delivery to the community.

Implications for Reva's Leadership Practice

This section considers the implications this newfound knowledge has made in my personal leadership practice. For the purposes of being concise, I will underscore only five concepts, namely the paradigm shift, paradox, stewardship, connectivity, and openness.

The paradigm shift from mechanical to ecological has profoundly changed how I enact, experience, and value leadership. I first stumbled upon Margaret Wheatley's writing in my MBA studies back in 2006. Because I had a microbiology background, there was something about the concept of self-organizing systems that intuitively made sense, but that I was too inexperienced to fully grasp. A few years into the doctoral journey, I pulled out her 1999 article and re-read it with new appreciation and the words jumped off the page, "In some ways, it is humbling to realize that we have not invented strategies for change; we have merely discovered them" (Wheatley, 1999, p. 481). Higher education is made up of people, biological entities, and so the comparison of organizing like an ecosystem begins to make much more sense than organizing like a car engine or wind turbine.

The day I stumbled upon paradox my life was forever changed for the better. Paradox, the simultaneous happenings of seemingly opposed realities or entities, reshaped my view on life. This concept explained my lived experience. All the frustrations at work, the confusing conflict amongst colleagues, the divisiveness in the media, and my personal internal turmoil

about what it means to be female, explained. Paradox resonated so deeply. It has brought a sustainable peace and calm to my life that I wish for everyone and I share with all that I mentor. Opposing forces co-exist, always, they must. This is the creative tension that fuels innovation. As a leader, I can embrace that reality and start to deal with the whole, rather than only seeing pieces or choosing sides. Accepting paradox, acknowledging the inequity for women, and embracing it as our superpower to shift the narrative towards opportunity and stop framing it as only challenges, is how we can start to dismantle the patriarchy to rebuild a better system, a fair and equitable system where everyone thrives. Where we live in a world of abundance, not scarcity; where we celebrate diversity and learn from each other to become better versions of ourselves that are more understanding, more forgiving and more matriarchal.

The distributed control tenet of CLT has its value. Letting go of control and power over people, systems, and processes, and instead distributing autonomy and extending trust for the work to be completed at the appropriate levels and the knowledge to be shared across the appropriate channels is freeing. Taking that one step further and relinquishing ownership in favor of stewardship, is an Indigenous concept (Kimmerer, 2015; Louie & Prince, 2023; McGregor & Marker, 2018). Stewardship, and noting that we are only holding this earth for a few years, is a concept I have come to adopt across many aspects in my leadership. The campus spaces that we occupy for a single hour each week, the curriculum and course shells that we teach for one or more semesters, and the students that we coach and mentor for only a couple of years, we do not own any of it. We are accountable, but we need to steward these resources for the next incumbent so they are better than how we found them to be.

Connectivism as a pedagogical theory that intrigued and resonated immediately. Connectivity as a process within networks, and maintaining networked relationships and

amplifying communications is powerful. Connectivity, as a way to amplify my influence as a leader and to make a bigger impact on higher education, is desirable. In closing, the findings of this study are most important because any time we give voice to personal human experience, we are a richer society for having done so.

Openness as a concept in distance education; openness as a concept in leadership; openness to learn, openness to be vulnerable, and the openness to different ways of thinking and being has been instrumental in my leadership practice. I hope I am modeling it. I hope people see that when you are open, boundaries will naturally form, but allow the system, or in my case the leader, to be adaptable to change.

Significance of the Research

This case study was able to assess the value of the learning of the network through the application of the Promoting and Assessing Value Creation in Communities and Networks Conceptual Framework tool created by Wenger, Trayner and de Laat (2011). The value-creation stories demonstrate how certain interactions contributed to both desired and undesirable outcomes within the context of the co-creation and implementation of a blended learning strategy at this polytechnic. I encourage the reader to use these value-creation stories as future guidance on how to promote the creation of value proactively within your own organizations, projects and contexts as appropriate. The value creation stories highlight the strength inherent in diversity and giving all participants equal voice as well as the power of the collective voice to amplify the fair and just participation interplay amongst each agent. Pragmatically speaking, this case study demonstrated the utility of PAVC tool in compiling, organizing, and documenting value, as well as progress using qualitative data.

Limitations of the Research

Limitations of this case study will be discussed within each layer of the contextual nest that surrounds the case: macro, meso, micro, and nano. At the macro layer, the contextual variable of the global pandemic is unprecedented and colossal. Its impact on the findings is inseparable and the data needs to be reviewed with that fact top of mind. However, there are still learnings to be had. This polytechnic institution provides training and education to support the Canadian economy and workforce, and so the Canadian government, policy, and systems is another limitation to be taken into consideration.

At the meso layer, the polytechnic institution has its own distinct culture, history, and systems that most certainly influenced the interpretation of the findings. My unique dual role as a researcher and a member of this institution provided an insightful perspective that the reader also needs to contemplate. The case, the project, at the micro layer naturally contained its one unique operational constraints. The local focus of case study methodology is unto itself a limitation.

Each individual participant at the nano level only represents themselves as this was not a sample. The make-up of the participants was narrower than had been initially recruited for, and so there is a lack of diversity in roles represented in the findings. This research looked at a very small slice of complexity leadership theory, as it focused on deepening the understanding of six enabling leadership practices. Its narrow focus may have caused some details to be missed.

Future Research

The analysis of this data has generated many follow-up questions regarding the interplay of the enabling practices. The findings generated from this case study only begin to uncover the

interplay of the six enabling leadership strategies and their impact on change initiatives. Much more research can be done to uncover the relationships between them. It is unclear whether the patterns identified are more general relationships that would hold true in other situations, as few anticipated that 2020 would be an epochal point in our human history. Future research using the PAVC tool to assess value would have merit for the CLT field of research.

There is also the opportunity to ask more questions about the relationships observed in this case study. Future researchers may want to further investigate and refine the inhibitor and catalyst continuum. There is the opportunity to ask more questions in regard to how some people are able to redirect those past toxic memories and overcome them to move forward productively, and some are not. And how enabling leaders can support that process and assist people to make that transformation in their mindset, or create conditions that facilitate.

Further research dedicated to flushing out more intricacies involved in information flows, through a complexity lens, would have merit to study the individual aspects to further reveal the benefits and challenges associated with each approach in isolation, and maybe different degrees of blending, versus the collective communication and information flows that are required to keep a project moving forward make for interesting research. A comparative analysis that can identify the balance, or the blending, of how to optimize the messaging so that both the individual and the collective needs are met would yield beneficial results. Future research should ask questions that may reveal why or how some agents in similar roles can act, or do act, in a much more connected manner across an organization. Although this case study was able to make some observations, it certainly provokes more questions than answers, an invitation to a worthy researcher.

Summary of Chapter Six

This dissertation research provided rich descriptions of how each of the six enabling practices were enacted, experienced, and valued in this polytechnic organization. The contextual reality, that this occurred during a global pandemic, cannot be removed, and the conditions would be difficult to replicate. What is not disputable is that the boundaries imposed by the pandemic conditions were a contributing factor to creating adaptive space and propelling the project to move forward at a speed the organization had not encountered in the past, and perhaps with long-term outcomes that will benefit the organization, and certainly the individuals involved, for a lifetime.

Interactions aid in the development of meaningful learning and the possibility for learning communities to form. Evidence for both functions of interactions was abundant in this case study. Dialogic interactions are a vehicle to increase understanding. Understanding is a strange attractor that can lead to innovation. Enabling leaders should create adaptive spaces that allow agents to increase their understanding.

In closing, this case study offers insights into leadership strategy at a polytechnic. It can be used to inform leadership practice of educational leaders embarking on change events under different conditions, as the findings within the case study form a chain of evidence that allows educational leaders the opportunity to interpret and find their own meaning (Gilham, 2000, p. 95), by incorporating the voices of personal human experience.

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Appendix A: Service-Centered Dominant Logic

Table 8

Service-Centered Dominant Logic (adapted from Vargo & Lusch, 2004, p. 7)

	Traditional Goods-Centered Dominant Logic	Emerging Service-Centered Dominant Logic	Six Principles of Service-Centered Dominant Logic
Primary unit of exchange	Goods	Knowledge, skills or services	The application of specialized skills and knowledge is the fundamental unit of exchange.
Role of goods	End products	Intermediate products or appliances or transmitters	Indirect exchange masks the fundamental unit of exchange.
Role of customer	Recipient of the goods	Co-producer of the goods	Goods are distribution mechanisms for service provision.
Determination and meaning of value	Value is determined by the producer. It is defined in terms of "exchange-value".	Value is determined by the consumer on the basis of "value-in-use".	Knowledge is the fundamental source of competitive advantage.
Firm-customer interaction	Customers are acted on to create transactions with resources.	Customers are active participants in relational exchanges and co-production.	The customer is always a co-producer.
Source of economic growth	Wealth is obtained from surplus tangible resources and goods. Wealth consists of owning, controlling, and producing more goods (customers).	Wealth is obtained through the exchange of specialized knowledge and skills. Wealth represents the right to the future use of knowledge and skills (customers).	All economies are service economies.

Appendix B: Value-Creation Stories Template II

(adapted with permission from Wenger et al., 2011)

Value-creation story: empty template that will inform the semi-structured interviews. Exploring examples that participants choose to include in their aspirational narratives, and applying the five cycles of indicators, the researcher will build value-creation stories.

Participant name:	
Typical cycle	**Your story**
Activity Describe a meaningful activity you participated in as part of adopting blended learning into your practice and your experience of it.	
Output Describe a specific resource this activity produced for you and why you thought it might be useful.	
Application Tell how you used this resource in your practice and what it enabled that would not have happened otherwise.	
Outcome a. *Personal:* Explain how it affected your success in your role as it pertains to blended learning b. *Organizational:* Has your participation contributed to the success of this polytechnic? (i.e.as evidenced in the institutional KPI's)	
New definition of success Sometimes such a story changes your understanding of what success is. If it happened this time then include this here.	

Appendix C: Value-Creation Stories Template I
(adapted with permission from Wenger et al., 2011)

Aspirational Narrative: empty template for participants to generate their aspirational goals

Name:	**Personal Change** (skills, attitude, identity, self-confidence, how I feel, etc.)	**Social Change** (the number, quality, frequency and emotions in my social connections)	**Professional Change** (ideas, insights, teaching materials, procedures, applications, etc.)	**Leadership Change** (my ability to influence, my voice, contributions, recognition, etc.)
Reasons for participation (challenges, aspirations. PD goals, meeting new people, etc.) **+/-**				
Activities, outputs, events, networking (lesson material, discussions, visits, etc.) **+/-**				
Value to me (being a better blended learning faculty member, handling difficult situations, improving organizational performance, etc.) **+/-**				

Appendix D: Letter of Information

Complexity leadership theory for the advancement of educational reform: Using value-creation stories to illuminate leadership strategy

October 26, 2021

Principal Researcher:

Reva Bond

Email: rramsden1@athabasca.edu

Supervisor:

Dr. Aga Palalas

agapalalas@athabascau.ca

You are invited to take part in a research project entitled 'Complexity leadership theory for the advancement of educational reform: Using value-creation stories to illuminate leadership strategy'.

This form is part of the process of informed consent. The information presented should give you the basic idea of what this research is about and what your participation will involve, should you choose to participate. It also describes your right to withdraw from the project. In order to decide whether you wish to participate in this research project, you should understand enough about its risks, benefits and what it requires of you to be able to make an informed decision. This is the informed consent process. Take time to read this carefully as it is important that you understand the information given to you. Please contact the principal investigator, Reva Bond Ramsden if you have any questions about the project or would like more information before you consent to participate.

It is entirely up to you whether or not you take part in this research. If you choose not to take part, or if you decide to withdraw from the research once it has started, there will be no negative consequences for you now, or in the future.

Introduction

My name is Reva Bond Ramsden and I hold the role of Dean, School of Construction at SAIT. I am also a Doctorate of Education, Distance Education program student at Athabasca University. As a requirement to complete my degree, I am conducting a research project about interactions between all stakeholders taking part in the co-creation and implementation of a blended learning strategy inside higher education, more specifically in polytechnic institutes in Canada. I am conducting this project under the supervision of Dr. Aga Palalas.

Why are you being asked to take part in this research project?

You are being invited to participate in this project because as a stakeholder of the blended learning strategy at this Canadian polytechnic you are being contacted based on your experience and role in the organization.

What is the purpose of this research project?

The objective of this study is to examine interactions that occur between and among all stakeholders during the implementation of a blended learning strategy within a polytechnic in Canada. Stakeholder refers to all employees including Executive Management Council members, Management Council members, Dean's Council members, Associate Deans, Academic Chairs, Faculty and Administrative positions. Recognizing that there are many variables within any interaction, the purpose of this research is to uncover key variables to confirm or refute a conceptual model of leadership for polytechnic educators.

What will you be asked to do?

This research is using case study, a qualitative interpretivist methodology. Each participant will complete a one-page aspirational narrative (template will be provided) before completing a one-hour long semi-structured interview using Zoom. The questions asked during the interview will explore how participants enacted, experienced and valued interactions that took place recently and may still be ongoing regarding the institutional reorganization that involved the separation of credit and non-credit course delivery.

A follow-up interview may be requested to explore a specific interaction in further detail.

Interviews will be conducted using Zoom and last approximately one hour. All research will take place online for consistency and convenience. Interview participants may be requested to review the transcripts of interview for correctness and completeness. The questions will relate to your experiences during the implementation of the blended learning strategy and more specifically the experiences that relate most closely to a change in your practice in your role. The study is expected to conclude by the end of February 2022.

What are the risks and benefits?

The benefits of the research are expected to include a body of knowledge generated that will inform an educator leadership model for polytechnics. Participants own learning about self and leadership may occur. There are no risks associated to the study. The participants have the right to refuse to be in this study or may skip questions or discontinue participation at any time up until the validation of the interview transcript by the participant has been confirmed.

Do you have to take part in this project?

As stated earlier in this letter, involvement in this project is entirely voluntary. Participants may refuse to answer any questions or to share information that they are not comfortable with. Participants from interviews may withdraw from the study any time prior to the validation of the interview transcript by the participant has been confirmed, by informing the researcher by email.

How will your privacy and confidentiality be protected?

The ethical duty of confidentiality includes safeguarding participants' identities, personal information, and data from unauthorized access, use or disclosure. Individuals will not be identified personally or individual's participation will not be identified. The transcripts of interviews will be identified by a pseudonym / code assigned by the researcher. The transcripts of the interviews will be stored digitally on a password protected Microsoft OneDrive. Audio and video files will only be stored until the transcripts have been verified, approximately one week after each interview. Any audio or video files will be destroyed upon transcript verification by participants.

Following the polytechnic Research Ethics Board approval, the research principal investigator will contact polytechnic employees to solicit their participation in the interviews. Following steps will be taken to maintain anonymity and confidentiality and no risk to the participants.

- Names of participants will be not be shared to safeguard identification of participants and maintaining anonymity.
- Role titles of participants will not be shared to safeguard identification of participants and maintaining anonymity.
- This information will be provided to the participants via the Information Letter and clarified prior to the interviews, in the event the participant has provided consent to participate.

As part of the case study, value-creation stories will be compiled, using feedback from the participants reported as a collective. A value-creation story is the outcome of the application of the framework created by Wenger et al. (2011) and has a standard format. Each story contains an event, a resource, how the resource is used, a change in practice and a personal reflection. This collective aggregate of feedback will also allow safeguarding identity of participants.

How will my anonymity be protected?

Anonymity refers to protecting participants' identifying characteristics, such as name or description of physical appearance. Individuals will not be identified personally or individual's participation will not be identified. Every reasonable effort will be made to ensure your anonymity; you will not be identified in any publications.

It is expected that there will be minimum 12 participants. Every step will be taken to safeguard identity of participants and findings from the analysis will be shared with the participants for their consent. Neither names nor job titles will be used at any point in reporting the findings.

The participants will be provided the contact details of the researcher, to contact at any time during the study for clarification or for any concerns. Additionally, the participants will be kept abreast of the study at different times of the study i.e.

- Validating the interview transcripts after the interviews and prior to starting the data analysis
- Approving the use of the aggregated value-creation stories i.e. feedback, within the data analysis section

How will the data collected be stored?

The Zoom audio and video recordings will be destroyed upon verification of each interview transcript. The transcripts of the interviews will be identified by a pseudonym / code assigned by the researcher. The digital files will be stored on password protected Microsoft OneDrive. The researcher journaling will also be stored digitally on password protected Microsoft OneDrive. The data will be retained for a period of five years after the completion of the study and subsequently will be destroyed. The mode of data disposition will include shredding any handwritten notes, printed copies and completing the request for disposition review in records management of Microsoft 365 compliance center.

Who will receive the results of the research project?

The existence of the research will be listed in an abstract posted online at the Athabasca University Library's Digital Thesis and Project Room and the final research paper will be publicly available. The results of this study will be reported to the doctorate degree committee members, Athabasca University Graduate Studies department as well as published on AU website. Using Microsoft OneDrive and SharePoint site, the study will also be shared with participants who were part of the interviews via email.

Who can you contact for more information or to indicate your interest in participating in the research project?

Thank you for considering this invitation. If you have any questions or would like more information, please contact me, Reva Bond Ramsden by e-mail rramsden1@athabasca.edu or my supervisor by agapalalas@athabascau.ca. If you are ready to participate in this project, please complete and sign the attached Consent Form and return it to Reva Bond Ramsden by emailing the form at rramsden1@athabasca.edu.

Thank you.

Reva Bond Ramsden

This project has been reviewed by the Athabasca University Research Ethics Board. Should you have any comments or concerns regarding your treatment as a participant in this project, please contact the Research Ethics Office by e-mail at rebsec@athabascau.ca or by telephone at 1-800-788-9041, ext. 6718.

This project has been reviewed by SAIT's Research Ethics Board. Should you have any comments or concerns regarding your treatment as a participant in this project, please contact by e-mail at research.ethics.board@sait.ca.

Appendix E: Participant Consent Form

Principal Researcher:

Reva Bond

Email: rramsden1@athabasca.edu

Supervisor:

Dr. Aga Palalas

agapalalas@athabascau.ca

You are invited to participate in a research study about interactions between all stakeholders taking part in the co-construction and implementation of a blended learning strategy inside a polytechnic in Canada. I am conducting this study as a requirement to complete my Doctorate in Distance Education, degree. In addition to being a doctoral student, I hold the role of Dean, School of Construction at SAIT.

As a participant you are asked to take part in the completion of an aspirational narrative, a one page form, that will then inform the questions asked and conversation that takes place during a single virtual interview. A follow-up interview with some participants may be scheduled in order to examine very specific experiences in more detail.

Interviews will be online using Zoom and last approximately one hour. All research will take place using the Zoom platform for consistency and convenience using the built in transcription capabilities. Interview participants may be requested to review the transcripts of interview for correctness and completeness. The questions will relate to your experiences during the implementation of the blended learning strategy and more specifically the experiences that relate most closely to a change in your practice in your role. The study is expected to conclude by December 2021.

The benefits of the research are expected to include a body of knowledge generated that will inform an educator leadership model for polytechnics. Participants own learning about self and leadership may occur. There are no risks associated to the study. The participants have the right to refuse to be in this study or may skip questions or discontinue participation at any time up until the validation of the interview transcript by the participant has been confirmed.

Following the polytechnic Research Ethics Board approval, the research principal investigator will contact the employees of this polytechnic to solicit their participation in the interviews. Following steps will be taken to maintain anonymity and confidentiality and no risk to the participants.

- Names of participants will be not be shared to safeguard identification of participants and maintaining anonymity.
- Pseudonyms / codes will be assigned to each participant by the researcher.
- This information will be provided to the participants via the Information Letter and clarified prior to the interviews, in the event the participant has provided consent to participate.

During the research the data will be stored on a Microsoft OneDrive cloud storage that is password protected. The data will be retained for a period of five years after the completion of the study and subsequently will be destroyed.

The mode of data disposition will include shredding the printed copies and completing a permanent disposition review through the Microsoft 365 compliance center to ensure the data is destroyed completely.

The results of this study will be reported to the doctorate degree committee members, Athabasca University Graduate Studies department as well as published on AU website. This project has been reviewed by the Athabasca University Research Ethics Board. Should you have any comments or concerns regarding your treatment as a participant in this project, please contact the Research Ethics Office by telephone at 1-800-788-9041, ext. 6718 or by e-mail at rebsec@athabascau.ca. Information may also be obtained from my dissertation supervisor, Dr. Agnieszka Palalas, at agapalalas@athabascau.ca.

Thank you for your assistance in this project.

CONSENT:

I have read the Letter of Information regarding this research study, and all of my questions have been answered to my satisfaction. I will keep a copy of this letter for my records.

My signature below confirms that I agree to participate in this research project and that:

- I understand the expectations and requirements of my participation in the research;
- I understand the provisions around confidentiality and anonymity;
- I understand that my participation is voluntary, and that I am free to withdraw anytime following the verification of transcripts and before the analysis stage of the data (approximately May 2021), with no negative consequences
- I understand that if I choose to end my participation during data collection, any data collected from me up to that point will not be retained by the researcher, unless I indicate otherwise.
- I am aware that I may contact the researcher, Reva Bond Ramsden, or the Office of Research Ethics, if I have any questions, concerns or complaints about the research procedures.

Additionally, by initialing the statement(s) below,

_____I am granting permission for the researcher to use the Zoom recording and transcription functions.

_____I acknowledge that the researcher may use specific quotations of mine, without identifying me.

_____I am granting permission for the researcher to attribute my name to any quotes used.

_____I would like to receive a copy of the results of this research study by email.

Your email address: _____

If you are willing to have the researcher contact you at a later time by e-mail or telephone for a brief conversation to confirm that I have accurately understood your comments in the interview, please indicate so below. You will not be contacted more than six months after your interview.

_____Yes, I would be willing to be contacted.

Signature of Participant Date

I have explained this project to the best of my ability. I invited questions and responded to any that were asked. I believe that the participant fully understands what is involved in participating in the research project, any potential risks and that he or she has freely chosen to participate.

Signature of Principal Investigator Date

Appendix F: Ethics Approval - Athabasca University

Athabasca University
RESEARCH CENTRE

CERTIFICATION OF ETHICAL APPROVAL

The Athabasca University Research Ethics Board (REB) has reviewed and approved the research project noted below. The REB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) and Athabasca University Policy and Procedures.

Ethics File No.: **24424**

Principal Investigator:
Mrs. Reva Ramsden, Doctoral Student
Faculty of Humanities & Social Sciences\Doctor of Education (EdD) in Distance Education

Supervisor:
Dr. Agnieszka Palalas (Supervisor)

Project Title:
Complexity Leadership Theory for the advancement of educational reform: Using value-creation stories to illuminate leadership strategy

Effective Date: September 03, 2021 **Expiry Date**: September 02, 2022

Restrictions:

Any modification or amendment to the approved research must be submitted to the AUREB for approval.

Ethical approval is valid *for a period of one year*. An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

A Project Completion (Final) Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date: September 03, 2021**

Carolyn Greene, Chair
Athabasca University Research Ethics Board

Athabasca University Research Ethics Board

University Research Services, Research Centre

1 University Drive, Athabasca AB Canada T9S 3A3

E-mail rebsec@athabascau.ca

Telephone: 780.213.2033

Appendix G: Ethics Approval - SAIT

NOTICE TO APPLICANT

research.ethics.board@sait.ca <research.ethics.board@sait.ca>
Mon 2021-10-25 8:15 AM
To: Ramsden Reva(Principal Investigator) <rramsden1@athabasca.edu>
Cc: Leslie Pidcock <leslie.pidcock@sait.ca>;Research Ethics Board <research.ethics.board@sait.ca>

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October 25, 2021

TO: Ms. Reva Ramsden

FROM: Research Ethics Board
SAIT

RE: NOTICE TO APPLICANT - Application #2016-100099
Complexity Leadership Theory for the advancement of educational reform: Using value-creation stories to illuminate leadership strategy

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We would like to advise that the above-noted revised proposal has been awarded APPROVAL on ethical grounds. The approval for the study "as presented" is valid until Date.

You must submit an annual status report for your project, and a final report at the conclusion of the project. Research expected to continue past the indicated period may be renewed upon receipt of a status report. For a template for your reports, please visit http://www.sait.ca/research-and-innovation/research-ethics-board.php.

Any modifications to the procedure, protocol or consent form must be submitted to the Research Ethics Board Chair for review and subsequent approval.

On behalf of the Board, please accept our best wishes for success in your research.

Sincerely,
Leslie Pidcock, Chair
Research Ethics Board
SAIT