RETHINKING PEDAGOGY FOR THE TIMES:

A CHANGE INFUSION PEDAGOGY

A Dissertation submitted by

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Abstract

This doctoral dissertation research reports on the exploration of higher education academics' pedagogical responses to complex societal postindustrial change. The topic arises from a deep personal interest in processes of societal change and the need for such processes to be in the professional practices of academics. The research problem that guides the study is: *In what way(s) and to what extent can University instructors be assisted to incorporate change-based concepts in their pedagogical practices through application of a conceptual framework for change infusion?*

In response to the problem, a change infusion model (CIM) arises from an analysis of authoritative literature on change. Change infusion is an educational process that utilises key concepts from theories of change to provide a meaningful context for pedagogical practice in times where pervasive societal transformation is the norm. Gay's (1995) multiple stages of infusion are of particular importance in the CIM. The generation of the theoretical definition of infusion in the CIM provides practising academics with an explanatory system that enables them to infuse significant elements of change into pedagogical practices. In essence, the CIM purports to guide instructors to move beyond teaching *about change* to teaching *for change.*

The research design includes the cognitive-constructivist theoretical foundations, with particular reference to Dewey (1933), Piaget (1951), Lewin (1951), Schön (1983, 1987), Calderhead (1988), and Patton (2002). Of particular importance is the analysis of opinions concerning pedagogical practice of a small number of University practitioners after engaging with the CIM during each of the three stages of trials. The trials utilize the cognitive-constructivist quality of reflection as a means to link theory to practice.

The conclusions from the research support a conceptual model, such as the CIM, for use to teach for change. As a result of the Stage 3 trial research in

particular, the conceptual model from the beginning point of the study is refined, thereby hopefully providing a useful tool for academics in a wide range of contexts and disciplines to respond in meaningful ways to the process of major change that impinge upon them and their work.

CERTIFICATION OF DISSERTATION

I certify that the ideas, experimental work, results, analyses, software and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

_____   _____
Signature of Candidate   Date

August 11, 2006

ENDORSEMENT

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CHAPTER 1: NATURE AND SCOPE OF THE STUDY

1.1   The Doctoral Experience: A Search for a Dissertation Topic

I am currently an instructor in higher education at a Canadian university. I chose
to pursue a doctorate in education, an area of study quite different from my prior
professional expertise, because I wanted to use the doctoral experience to expand
my understanding of pedagogy or pedagogical practices, an aspect of professional
life I value highly. My investigation of doctoral programs identified several
excellent institutions in North America and abroad. I chose the University of
Southern Queensland (USQ), because some of the faculty shared my interest in
pedagogy and contemporary postindustrial times. As well, at USQ, I could study
in a distance learning, or dispersed environment—allowing me to keep my job
while pursing a doctorate. I saw distance learning as a potential means for
continued research and as a mode of providing a course offering in the future.

I chose leadership in higher education as the primary area of study. This choice
was made in order to gain a greater understanding of the area where I could
potentially lead others and make a difference in the educational system. After a
considerable search, I chose a research topic on a pedagogical response to
contemporary change. I began by reviewing literature on leadership in
contemporary networks—internal networks, external networks, forms of
integration, and network leadership issues such as establishing boundaries to
achieve control. My search became somewhat more focused after reading a
book by Limerick, Cunnington, and Crowther (1998) entitled *Managing the
New Organization—Collaboration and Sustainability in the Post-Corporate
World.* I was particularly drawn to the sections of the book that provided
insights into themes within four time periods: (a) the 1930s industrial
revolution, (b) the 1940s and 1950s focus on social needs and a system of
assistance, (c) the 1960s emphasis on the individual followed by the 1970s
movement to an open social model, and (d) forces of complexity and change

during the 1980s and 1990s. When reading this material, I found myself examining the leadership during each time period and how leaders managed the change encountered. I developed a perspective whereby it seemed possible for leaders in any change-based time period to develop processes that lead to greater insight and success. This perspective was applied to university instruction. It seemed logical that options for teaching about contemporary change could contribute to the educators' success in training themselves, and the students, to function in the postindustrial world. Consequently, I directed my research in the area of instructional pedagogy in higher education during contemporary postindustrial change-based times.

I refined the dissertation topic while preparing a research paper for a doctoral course. In this paper, I contemplated the question, "Is course content, as it is currently structured, sufficient to prepare students for the postindustrial future?" I looked at forms of leadership that seemed most suited to preparing students for work in an emerging postindustrial Canadian society. This early work examined contemporary leadership. I applied the leadership characteristics to higher education in an effort to determine how to adapt courses to advance higher education for what students needed to know about contemporary postindustrial change. I concluded that the topic of postindustrial change should not be offered in special or separate courses on change, but rather, should be incorporated into the design of current courses. Accordingly, I proposed a process for incorporating change within courses that I called a "dual teaching paradigm." This I described as teaching with two areas of concentration: (a) the regular course topics and (b) contemporary postindustrial change theory and its application to the regular course content. I viewed the implementation of a dual teaching paradigm as the responsibility of every educator interested in preparing students for postindustrial society.

The progress to the present research topic, a pedagogical response to contemporary change, continued through additional readings conducted during the rest of my doctoral course work.

An analysis of the literature indicated that we are living in a period of change that has been described as a postindustrial era (Bell, 1973; Zuboff, 1988). The impact of postindustrial change on contemporary society has resulted in an ever-increasing environment of complexity and unpredictability (Choo & Bontis, 2002; Homer-Dixon, 2001; Kozlowski, Brown, Weissbein, Cannon-Bowers, & Salas, 2000). According to Hirschhorn (1984) and Sproull and Kiesler (1991), this environment demanded a process of active, continuous learning in order to accommodate change.

Postindustrial change in higher education was considered as a dissertation research topic and the following question was raised: "Is a pedagogical response to contemporary postindustrial change necessary?" To answer this question, I considered the predicted rate or speed of change and the number of years postindustrial change was expected to continue. Modis (2003) said that the current rise of up to three significant world events within the span of 88 years represented a rate of evolutionary "change and complexity [that] is being witnessed for the first time in the history of the universe" (p. 32). However, Modis' mathematical calculations suggested that the peak rate of contemporary change had already occurred-- in approximately 1990. On reading this, I asked myself, "If the peak rate of postindustrial change has already passed, is a pedagogical response necessary for the on-going change?" Modis answered this question with his prediction that rapid change (a) will continue over several more decades and (b) will fluctuate during this time period in a series of peaks and valleys of change. Therefore, I concluded that a pedagogical response to postindustrial change would be appropriate for educators. This conclusion was supported by Fullan's (1993) suggestion that instructors adapt to the times, as "teachers are agents of educational change and societal improvement" (p. 11).

In reviewing literature for this dissertation, I focused on understanding the nature of contemporary postindustrial change, including its influence on education. This review formed the basis for the preliminary pedagogical model I subsequently developed. A literature review is offered in Chapter 2; however, some examples of change's impact on higher education are presented below.

- Change is advancing along a variety of routes, including the social, cultural, economic, and technological avenues (Kershaw & Safford, 1998; Privateer, 1999).

- These change forces coalesce to affect the overall context of higher education (Kapitzke, 2000).

- Learning may challenge what are currently seen as absolute truths (Gergen, 1994).

- New constructivist pedagogical methods that emphasize a broader understanding of knowledge and skills can result in even more advanced knowledge (Wilson, 1997). More and more, instructors need to become their own teachers, able to create guiding questions to develop one's own knowledge, develop their course of action, and find solutions through self-motivated learning (Symes & Preston, 1997b).

- Information processing and the generation of knowledge needed to be emphasized (Kapitzke, 2000), with particular "attention [to] the implications and contingencies of our knowing…to realize that the world and our tasks are…dynamically interactive" (Rader & Rader, 1998, p. 1).

- Peer collaboration and reflection aided the advancement of one's competencies for change (Reichenback, 1988; Swartz, 1998).

- The literature emphasized two divergent fronts: (a) learning required group participation (Rader & Rader, 1998) and (b) personally developed advanced knowledge that conferred a competitive advantage was self created (Zack, 2002).

The literature clearly showed that postindustrial change created a wide variety of challenges for higher education and educators.

1.2   The Research Problem and Research Questions

The field of leadership in higher education was chosen for this dissertation and the specific area of contribution selected was a pedagogical response to postindustrial change. The selected topic was finalized based on three key elements. The first element was that the literature clearly indicated society, including education, was influenced by postindustrial change (Homer-Dixon, 2001; Modis, 2003). The second element was a personal desire for an expanded understanding of pedagogical practices for postindustrial change. The third element was based on the conclusions reported in the literature that instructors must learn to teach themselves to find solutions for the times (Symes & Preston, 1997b) and that new constructivist pedagogical methods be utilized for developing knowledge or insights (Wilson, 1997). The dissertation topic concentrated on the development of a model for guiding instructors at the higher education level to adapt pedagogy for change-based times.

In the literature review, I found work on the influence of postindustrial change, suggestions for restructuring institutions due to change, and calls for improved professional practice. However, no one clear, proven and accepted appropriate response for adapting personal pedagogy for postindustrial change was provided. The intent of this inquiry was to aid instructors to adapt pedagogically to advance understandings and insights for postindustrial change. This intent led to the development of the following research problem statement:

The Research Problem: *In what way(s) and to what extent can University instructors incorporate theories of change in their pedagogical practices through the application of a conceptual framework?*

To address the research problem, I decided to develop a conceptual model to assist university instructors to adapt pedagogy for the times. The model was developed with a belief in Gay's (1995) statement that an infusion process was a means to link contemporary theory with instructional practice. The concept for the model was that characteristics from contemporary theories of change could be infused into higher education pedagogy. The infusion process utilized in the model was based on an adaptation of Gay's four sequential stages of infusion including *inclusion, infusion, deconstruction, and transformation.* These stages are discussed in Chapter 2. The aim of the pedagogical infusion process used in the model was to help university instructors create a context or an environment of change within the classroom that would simulate real-world change occurring outside the classroom.

1.2.1 Definition of Pedagogy and the Concept of Rethinking Pedagogy

The *Canadian Oxford Dictionary* (2004) defines pedagogy as "the art or science of teaching" (p. 1146). Although this definition has been widely accepted, the definition of pedagogy within the literature was more multifaceted. I combined these multiple meanings to create an operational definition or starting point for this research.

To begin defining pedagogy for this inquiry, the conceptual work of Newmann, Secada, and Wehlage (1995) at the University of Wisconsin-Madison Centre on Organization and Restructuring of Schools, was particularly informative. They promoted the idea that pedagogy was "the combination of assessment and daily teaching practices used by a teacher" (p. 4) and determined that "authentic pedagogy" evolved from high quality instruction, learning, and assessment. The criteria established for authentic pedagogy by Newmann et al., included the "construction of knowledge," "disciplined inquiry," and "value beyond school" (p. 8). They also purported that, when teachers engaged as a professional community in generating authentic pedagogy, there was a "payoff in improved academic achievement" (p. 8).

Andrews and Crowther (2003) used the Wisconsin-Madison research to frame what they called three-dimensional pedagogy (3D-P). Their 3D-P included an integrated Personal Pedagogy (an individual's pedagogical ability), Schoolwide Pedagogy (pedagogical principles accepted by the professional community), and Authoritative Pedagogy (pedagogical principles accepted internationally). According to Crowther (2005), the 3D-P concept enhanced the evolution of teaching into a leading profession in postindustrial societies.

In the definition of pedagogy for this inquiry, constructivism was particularly important. Constructivism encouraged "interpretive understandings, or meaning with special attention to [the] context" (Patton, 2002, p. 114). A constructivist perspective of meaning or knowledge included "holding certain beliefs about the world, this…being justified in experience and…conceptual reasoning and thinking" (Von Krogh & Grand, 2002, p. 172). According to Spender (2002), this knowledge was considered to comprise a "platform…[for] making judgements" (p. 158).

Bernstein's (1971) perspective of pedagogy was important for this research and complemented the constructivist view. Bernstein believed that pedagogy was comprised of basic organizing principles based on the knowledge that teachers individually valued and thus used to frame their instructional and learning strategies. Mortimer's (1999) view of pedagogy that one person consciously aided another's learning also complimented the constructivist view. In addition, learning that was advanced with reflection (Abbott, 1994; Schön, 1983, 1987) was considered a component of an instructor's personal development or professional development (Becher, 1996; Brockbank & McGill, 2003; Nicholls, 2001).

Based on the foundational perspectives outlined above, the following definition of pedagogy was developed for use in this research: Pedagogy was the

instructional practices established by an instructor including what a teacher conceptually conceived, organized, or performed and encompassed numerous forms of teaching, learning, and assessment strategies. Incorporated within this definition of pedagogy was a belief that altering the organizing principles, or the way the instructor designed or organized daily practice or pedagogy, had the potential to alter or generate new teaching or learning environments, and hence, stimulated opportunities to develop new meanings.

Utilizing this operational definition of pedagogy, I developed a conceptual model by rethinking pedagogy for the infusion of change. The first model I developed came out of the literature review. I then had research participants that were university instructors engage with the model and, based on the instructors' comments, the model was refined. The following Research Questions guided the model development and the engagement with the model.

1.2.2   Research Questions

The Research Problem was: In what way(s) and to what extent can University instructors incorporate theories of change in their pedagogical practices through the application of a conceptual framework?

Research Question 1 was then developed.

Research Question 1: *What are the features of a theoretical framework for adapting pedagogy to postindustrial change that surface from analyses of authoritative literature and research?*

The answer to Research Question 1 flowed from my review of literature; it also resulted in a theoretical framework to guide the design of a model of how instructors can adjust their pedagogy to accommodate postindustrial change. I called the model the Change Infusion Model (CIM).

I received feedback on the CIM when I presented the model at an international conference and asked for comments through a survey. The feedback provided encouragement to continue the research on the model but no alterations for the model prior to a 3-stage trial.

I then conducted a 3-stage trial whereby university instructors engaged with the model. Each trial stage was established to elicit a response to the model concept and design. The first iteration of the model came directly from the literature reviewed; however, when university instructors were given an opportunity to work with the model, it was revealed that changes were necessary. Based on feedback from instructors' comments, the model was refined further. A full accounting of the methods for the 3-stage research trials is outlined in Chapter 3.

To structure the research trials, I incorporated Research Question 2 into the study.

Research Question 2: *What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?*

After the Stage 1 trial, an additional research question was added. The additional question followed "emergent design flexibility" (Patton, 2002, p. 40) and was added in an attempt to delve deeper into the responses of university instructors who engaged with the preliminary CIM. I added the following secondary research question:

Research Question 2(a): *What meanings and interpretations do the research participants give to the Change Infusion Model concepts?*

Adaptations to the research questions and methods as the trials progressed followed Patton's (2002) "emergent design flexibility" (p. 40). This design method allowed for adaptations to be made as understandings were revealed. I also added a collaborative discourse method (a series of collaborative meetings between the research participants and researcher) and two more secondary research questions to guide the collaborative discourse. I used discourse analysis questions to guide an exploration of the response of research participants to the CIM and applied the findings to the research questions and the subsequent stages of the trial.

Research Question 2(b): *How do the research participants conceptualize their pedagogy at different stages of the trials?*

Research Question 2(c): *What are the reported impacts of the Change Infusion Model on the pedagogical approaches of the research participants?*

Throughout the 3-stages, I used the following question to guide the refinements made to the model:

Research Question 3: *What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?*

1.3 Overview of the Research Design and Methodology

This qualitative study utilized a mixed methods approach with conceptual, empirical, and descriptive elements. The conceptual element in the research was the theoretical framework for a model of pedagogical change infusion in response to Research Question 1.

In designing the preliminary Change Infusion Model and subsequent research trials with research participants engaging with the model, I used the cognitive-

constructivist approach. The cognitive element allowed the researcher to describe specific action elements in the model for research participants (that were all instructors in higher education) to follow in a step-by-step manner. This cognitive element encouraged research participants to perform a consistent, sequential series of actions (Bednar, Cunningham, Duffy, & Perry, 1995). Each instructor that engaged with the model followed the same sequence.

The constructivist element allowed for the creation of meaning by the research participants. Meaning was created with the use of reflection. Reflection was incorporated within the model and encouraged research participants to construct their own meaning concerning pedagogy for postindustrial times. Constructivism allowed for the development of multiple options or outcomes in the constructed meaning. The constructivist element was designed with "emergent design flexibility" (Patton, 2002, p. 40). The allowance for the use of flexibility within the design meant that there were no instituted parameters on reflection and meaning when using the model.

The empirical element in the study focused on refining the preliminary model in answer to Research Questions 2, 2(a), 2(b), 2(c) and 3. This element incorporated feedback on the preliminary model obtained through a survey at an international conference and the three-stage research trial in which research participants engaged with the model.

The validity of the analysis was based on the constructivist view of an interpretation that was centred on the particular reader (Habermas, 1979; Roseneau, 1992). Analyses of the responses concerned meanings constructed about the model and utilized discourse analysis whereby meaning was discovered (Klein & Truex, 1996; Truex, 1993). Discourse analysis questions were developed to focus the analyses of the participant responses to reveal the

meaning or understanding and opinions concerning the CIM and its use as related to the research questions.

The descriptive element within the study included an account of the research participants' pedagogical practices and opinions as they related to the CIM. These are described in Chapter 4 and discussed in detail in Chapter 5.

1.4   Significance of the Study

This research contributed significantly to the field of higher education as an inquiry into the ways and extent that university instructors can be assisted to incorporate change-based concepts in their pedagogical practices. The inquiry contributed to the development of a model that encouraged university instructors to learn to adapt pedagogy for change-based times. The designed model contributed a method to guide educators in training themselves to adapt for the postindustrial world.

This inquiry was significant in revealing a pedagogical strategy that moved beyond teaching *about change* to encouraging insights *for change* with an innovative model. The model encouraged research participants to infuse key characteristics from theories of change into pedagogical practice. The model provided the option to adapt pedagogical structures to mimic postindustrial change within the classroom.

This research contributed by sharing insights with the educational community on adapting pedagogy for the times. According to English and Baker (2006), a race has begun in the area of knowledge transfer. These researchers indicated that the race included being able to transfer knowledge quickly as part of the continuous development of more knowledge. English and Baker suggested learning and sharing concepts is a necessary part of transferring knowledge. Recorded and shared research insights were part of the collective efficacy for instructors in the race for greater understandings. By sharing, research

participants were provided with an option for managing the challenge of adapting pedagogy. This research aided the educational community by sharing learning from the inquiry to adapt pedagogy by infusing change characteristics into professional classroom practice.

Overall, this inquiry was significant for contributing to understandings concerning adapting pedagogy for contemporary change-based times from a practitioner's perspective. Participant university instructors' opinions and suggestions provided in the research trials were used to advance the model from a preliminary stage to a refined stage. The research participants influenced the development of the model with their personal perspectives on the reality of adapting pedagogy in the educational environment. Research participants also determined the practicality of the CIM. As a result of this research, understandings concerning the demands of adapting pedagogy and academic life were revealed. The understandings contributed were part of the continuous search for even greater understandings. The search was driven by an environment of postindustrial change that demanded continuous learning (Sproull & Kiesler, 1991).

1.5   Organization of the Dissertation

The organization of this dissertation starts with the description of the preliminary model developed from an analysis of authoritative literature. The preliminary model, and the literature used to design each step within the model, is outlined in Chapter 2. Next, the research study focus concentrates on two elements including (a) the survey feedback on the model obtained from an international conference and (b) the three-stage research trials conducted with instructional professionals engaging with the model. The methods, the survey feedback and the research trials are presented in Chapter 3. The study findings are then presented in Chapter 4, and the interpretations and discussion is in Chapter 5. The research trials results advance the CIM from a preliminary stage

to a refined stage. The refined CIM is presented in Chapter 5 and conclusions are offered in Chapter 6.

1.6   Conclusion

This research document, comprised of 6 chapters, discusses the change infusion model (CIM) as a means to guide university instructors in a pedagogical response to contemporary change-based times. This dissertation is compiled and submitted in partial completion for a Doctorate of Education from The University of Southern Queensland (USQ) in Toowoomba, Australia. The dissertation follows the regulations provided by The University of Southern Queensland, Faculty of Education, 2002 Policy, Guidelines, and Procedures for the Development of the Proposal, Supervision, Preparation and Examination of the Doctorate of Education (referred to as the Faculty of Education policy document).

CHAPTER 2: FUNDAMENTAL PRINCIPLES OF THE CHANGE INFUSION MODEL

2.1 Introduction

This inquiry investigates an innovative model that guides university instructors to incorporate theories of change in their pedagogical practices. There is no single researcher or body of literature that incorporates the knowledge upon which this inquiry is based. Consequently, the structure of this review incorporates a series of sections.

The first section looks at a context of change and includes theories of change, theories of organizational change, and theories of educational change. The next section concerns educators and the challenge of change and focuses on reflective practice as professional development. Attention is then on a trend in design experiments. These sections provide the context, historical perspectives, and the foundation of knowledge leading to the final section in this Chapter.

The final section in this Chapter provides the theoretical framework for the construct of the preliminary Change Infusion Model (CIM). The framework arises from analyses of the authoritative literature. This section concludes with a hypothetical example that illustrates the use of the CIM in practice.

2.2 Context of Change

We are living in a contemporary change-based environment (Bell, 1973; Modis, 2003; Zuboff, 1988). Contemporary change presents a unique rate of rapid change (Modis, 2003). This contemporary change impacts all aspects of society in contemporary times (Homer-Dixon, 2001). The impact of change on the environment includes complexity and unpredictability (Choo & Bontis, 2002; Kozlowski, Brown, Weissbein, Cannon-Bowers, & Salas, 2000). Modis' (2003) mathematical calculations predict the continuation of contemporary change for decades into the future. There is a growing body of literature has been

developed on theories of change and mechanisms for managing contemporary change.

2.2.1 Theories of Change

There seems to be a large number of theories of change in the literature. It is impossible to cover all of the theories of change in this review. Due to the expansive array of theories, this presentation includes a synopsis of key theories that relate to this research and express the main themes in the literature. The theorists include researchers such as Drucker (1995), Fullan (1993, 1999, 2001), Handy (1996), Kanter (1994, 1995), Kotter (1992, 1995, 1998), Lewin (1943, 1951); Limerick, Cunnington, and Crowther (1998), Lyotard (1984); Mezirow (1991), Pascale (1990), Schön (1973), Senge (1990a, 1990b, 1999), and Stacey (1996a, 1996b).

2.2.1.1 Theories of Individual Change

The literature indicated that individuals adapted to change. Lewin (1951) presented a three-phased model that outlined the stages an individual completed when going through a change process. Lewin referred to these phases as 'Freezing-Changing-Refreezing.' His perspective showed that individual change included understanding or 'unfreezing' of the current action, position, or stance. The introduction of the change that one wanted to implement and then the 'refreezing' of the action, position, or stance for use followed this process.

Mezirow (1991) indicated that an important element in the change process was an individual's mental awareness and perspectives of change. Mezirow's Theory of Perspective Transformation showed that during change transitions, "our assumptions have come to constrain the way we perceive, understand, and feel about our world" (p. 167). Due to the impact of one's assumptions, Mezirow encouraged the development of a perspective that offered choice and understandings for change. Mezirow called this an "integrative perspective"

(p. 167) which involved combining multiple options with one's knowledge.

The literature revealed that individuals could be enticed to change. According to Bennis, Benn, and Chin (1985), three strategies were available to entice change. The strategies included the educative/empirical-rational strategy, the normative/persuasive strategy, and the power/coercive strategy (p. 24-43). The educative/empirical-rational strategy utilized reasoning along with a link to individuals' self-interests to entice change. The normative/persuasive strategy enticed change with persuasion and collaboration that aimed to alter one's understandings and values. The power/coercive strategy utilized pressure from political and economic avenues to entice change (pp. 24-43). The three strategies were promoted as means to entice an individual to change.

The literature revealed that some individuals had a willingness to embrace change and others did not. Schön (1973) indicated that there was a tendency for some individuals to resist change. Forces of resistance to change could be revealed with Lewin's (1943) *Force Field Analysis.* Lewin's framework provided a management technique to reveal the variables or the 'restraining forces' and 'driving forces' for change. Lewin (1951) promoted that an individual's environment included a "life space" of multiple forces of influence (in Askew & Carnell, 1998).

Overall, the literature indicated that individuals adapted to change, and that one's openness to change was important in the process of change. The environment included forces that influenced individual change and strategies used to entice change.

2.2.1.2 Theories of Societal Change
Society has also felt the impact of contemporary change. The authoritative literature revealed that change produced an impact beyond the individual and

that society adapted to change. Lyotard (1984) and Drucker (1994) produced historical overviews on contemporary change within society.

Lyotard (1984) provided a historical overview of the change transitions that occurred in society over an approximately 30-year time period starting in the 1950's. Lyotard's historical overview illustrated that the key societal change was a movement to knowledge as a "principle force of production" (p. 1). This meant that constructed knowledge was advancing as the valuable commodity of the times.

Drucker (1994) provided a historical overview on the transformation of the social structure and the worker. Drucker concluded that: "no century in recorded history has experienced so many social transformations and such radical ones as the twentieth century" (p. 53). Drucker determined that:

> work and work force, society and polity, are all, in the last
> decade of this century, *qualitatively* and *quantitatively*
> different not only from what they were in the first years
> of this century but also from what has existed at any other time
> in history; in their configurations, in their processes, in their
> problems, and in their structures (p. 53).

Drucker indicated that during this time period, the blue-collar worker came into existence and then fell from the position of priority when replaced by the technologist. The technologist was "someone who work[ed] both with hands and with theoretical knowledge" (Drucker, 1994, p. 56). The shift to emphasize knowledge within work had in his terms two incarnations. The first incarnation was when knowledge was "applied to existing processes, services, and products, it constitute[d] productivity" (in Limerick et al., 1998, p. 10). The second incarnation was when knowledge was "applied to new processes, services, and products, it constitute[d] innovation" (in Limerick et al., 1998, p. 10).

The new worker defined the contemporary era and Drucker (1994) referred to them as "knowledge workers" (p. 62). Drucker indicated that these workers gave "the emerging knowledge society its character, its leaderships, it social profile" (p. 62). Drucker indicated that these workers required "formal education and the ability to acquire and apply theoretical and analytical knowledge" (p. 62). Thus, in the new society, education was a pivotal element and "the school [was] its key institution" (Drucker, 1994, p. 66).

Society felt the impact of contemporary change as knowledge rose in value. This elevated the importance of education and the educational institutions.

2.2.1.3 Theories of Organizational Change

Change also influenced contemporary organizations. (Schön, 1973) revealed that organizations adapted intentionally to the challenge of change (Meyer, Goes, & Brooks, 1994). To aid in understanding the new contemporary environment, theories of organizational change were developed.

According to Kotter (1998), Goss, Pascale, and Athos (1998), much of the work presented in the literature on organizational change was founded in Lewin's (1951) three phases or actions for individual change that were called 'Freezing-Changing-Refreezing.' These authors indicated that Lewin's model provided the framework for a change process of an organization because a collection of individuals made up the organization. Multiple theories for organizations intentionally adapting to change were found within the literature.

One prominent theme in the organizational change literature was the movement of organizations to support learning. Senge (1990b) promoted the development of a *learning organization*. A learning organization was described as:

> Organizations where people continually expand their capacity
> to create the results they truly desire, where new and expansive
> patterns of thinking are nurtured, where collective aspiration is

set free and where people are continually learning how to learn
together" (Senge, 1990b, p. 3).

A learning organization invested "in improving the quality of thinking, the capacity for reflection and team learning, and the ability to develop shared visions and shared understandings of complex business issues" (Senge, 1990b, p. 142).

Strategies were offered in the literature for managing in times of organizational change. Pascale (1990) suggested an essential ingredient for an organization to remain current with the times was to use a process of persistent questioning. Questioning was viewed as an element that aided in understanding and setting the position and direction for the organization.

In addition, Pascale (1990) laid out key features an organization needed during times of organizational change. The features included: (a) a holistic rather than piecemeal view of the organization, (b) embracing change as a source of energy and renewal, and (c) a climate that encouraged people to identify with company goals and apply their full energies to achieving them (p. 174). These organizational features offered organizations the ability to manoeuvre in a change-based environment.

The strategy of learning from organizations that had completed a change process was promoted in the literature. Kotter (1995) conducted a review of 100 organizations and drew lessons from the process of organization change that had occurred over a 10-year span. The

most general lesson to be learned from the more successful

cases [was] that the change process goes through a series of phases

that, in total, usually require[d] a considerable length of time (p. 59).

Kotter's work resulted in the production of eight steps that would transform an organization for contemporary change-based times. The steps included (a) establishing a sense of urgency, (b) forming a powerful guiding coalition, (c)

creating a vision, (d) communicating the vision, (e) empowering others to act on the vision, (f) planning for and creating short-term wins, (g) consolidating improvements and producing still more change, and (h) institutionalizing new approaches (p. 61). Kotter concluded that if any of the eight steps were not completed, an error in organizational change process occurred. Kotter indicated that a reduced number of errors "spell[ed] the difference between success and failure" (p. 67). A specific number of errors that could be committed by an organization that remained successful were not determined.

Kanter (1994, 1995) offered that organizational success stemmed from elements such as understanding globalisation, managing discontinuity, and the use of collaboration. By 1998, Kanter recorded the popular idea that the organization:

> require[d] faster action, more creative manoeuvring, more
> flexibility, and closer partnerships with employees and
> customers…more agile, limber management that pursued]
> opportunity without being bogged down by cumbersome structures
> or weighty procedures that impede[d] action. Corporate giants, in
> short, must learn to dance" (p. 20).

Learning to dance was related to advancing understandings and organizational manoeuvring for change.

2.2.1.4 Organizational Leaders in the Change Process

Change influenced the leadership within organizations. Bridges (1991) advocated that organizational change was "situational" (p. 3). To manage each organizational change situation, Bridges encouraged a concentration on the individuals within the organization that completed the change transitions. Bridges suggested individuals required elements such as processes developed to advance change acceptance and assistance to aid individuals to cope throughout the change process. This process required leadership.

Helgeson (1996) reported a renewed interest in leadership in the context of change within the literature. Leadership for contemporary change was not focused on the organizational authority figures, but was derived from members at any of the multiple levels of status within the organization.

Limerick et al. (1998) indicated that leadership was "not considered to be the property of a single individual or élite group at the apex of a hierarchy" (p. 186). Limerick et al. revealed leadership to be "the task of all participants" (p. 220). Similarly, Drucker (1994) proposed that leadership was derived from any contributing member of the organizational team.

Groups of members within a successful organization, according to Stacey (1992) needed to "perform complex learning spontaneously" (p. 112). Organizational leadership to aid in the production of learning was promoted in different manners. Pascale, Milleman, and Gioja (2000), along with Senge (1990b), indicated the role of the leader was to act as the designer of the learning. This leadership designer role included being "a context setter... not an authority figure with solutions" (Pascale, et al., p. 191). Drucker (1994) positioned the leader to be the manager of knowledge. This role required the leadership to make the knowledge "productive" (Drucker, p. 72). Kouzes and Posner (2003) positioned the leadership as the promoter of "the guiding principles of the organization" (p. 185). These principles were needed to keep the members of the organization heading in the same direction.

Kotter (1992) promoted that the leaders' main role was coping with contemporary change. Kotter (1992) indicated that the leadership needed to set the direction for coping by gathering "a broad range of data and look[ing] for patterns, relationships, and linkages that help explain things" (p. 18). The direction was not the production of plans which complemented the direction but was composed of created "visions and strategies" (Kotter, p. 17). This strategy was a means to cope with change by encouraging the organizational

membership to develop common understandings of the direction the organization was heading.

Senge (1990a) described the leadership role to be what he referred to as the "designers, teachers, and stewards" (p. 9). Senge outlined the leadership required the skill to integrate "thinking and acting at all levels" (p. 7). Senge (1990a) envisioned that the leadership advanced the building of a shared vision (p. 13) and systems thinking (p. 15). A shared vision required an ongoing process of promotion. Also, a shared vision needed to be integrated with personal vision and what Senge referred to as "extrinsic and intrinsic visions" along with differentiating between "positive and negative visions" (p. 13-14). Senge stated systems thinking was comprised of several elements including: (a) seeing interrelationships and processes, (b) moving beyond blame, (c) distinguishing detail complexity from dynamic complexity, (d) focusing on areas of high leverage, and (e) avoiding symptomatic solutions (Senge, p. 15).

Pascale (1990) declared the leadership mindset an important element in contemporary times. Contemporary leaders needed to adapt their mindset to be open to the changing environment. The adaptation included an understanding that what worked in the past may not be appropriate for managing within the current environment of change. Pascale stated: "we must break the chains of the old mindset if we are to grapple successfully with the task of managing adaptive organisations" (p. 88). The new mindset provided a leader with an "invisible force… [that] ignite[d] a lot of little fires, and then harnesse[d] their thermal energy" (Pascale, 1990, p. 28-29). However, Pascale believed that the Western cultures were slow when it came to developing this mindset (in Limerick et al., 1998).

Limerick, Cunningham, and Crowther (1998) observed the changing role of the leader in organizations. Limerick et al. noted that managers:

> Whether or not they recognised the total pattern, they were learning

to manage a new organisation in a different world. They were

developing an innovative configuration of strategy, structure, and

culture that offered new performance capabilities, and that

demanded new managerial skills. They had begun to arrive at … what

we call the *Fourth Management Blueprint*" (Limerick et al., 1998, p. 8).

Limerick et al. outlined four blueprint time periods. The First Blueprint
included the industrial revolution (p. 29). The Second Blueprint saw the shift
"from the formal organisation to the information work/group" (p. 32). The
Third Blueprint included the management structure that included the "model of
organisational choice" (p. 53). The Fourth Blueprint included the advancement
of a "paradigm of loose coupling (p. 53). This blueprint included networks with
leadership that included "collaborative individualism" (p. 43).

The concept of collaborative individualism was promoted as a new
development in organizations. Collaborative individualism included "a form of
autonomy for the individual which was not a part of industrialised work setting
associated with earlier blueprints" (Limerick et al., 1998, p. 103). Collaborative
individualism required "a different mindset, different competencies" (Limerick
et al., 1998, p. 10). In an environment of collaborative individualism,
responsible individuals had the capacity to form loosely coupled networks that
were "held together by common cultures, shared world of meanings and
values" (Limerick et al., p. 128). The networks were guided by "multiple
leadership roles that together … sustain[ed] and transform[ed] the organisation"
(Limerick et al., 1998, p. 45). The management of the loosely coupled network
needed a mindset that allowed movement: "from people as resources to
organisations as resources; from inputs as resources to processes as resources;
and from knowledge as a resource to knowledge technology as a resource" (p.
211). This leadership mindset required one to "embrace individualism,
collaboration, and innovation" (p. 22).

By the year 2000, the literature reemphasized the need to meet the challenge of continuous organizational change. Christensen and Overdorf (2000) called the continual state of change in the organizational environment 'disruptive.' Beer and Nohria (2000) indicated that the organizational leadership needed to continuously work to situate the organization for the next stage in a cycle of continuous change. Christensen and Overdorf (2000), along with Enriquez and Goldberg (2000), called for additional models and tools that focused on specific change issues within a particular context.

Leadership in contemporary times was affected by change. Leadership was required for a contemporary environment that provided all organizational members "a voice, regardless of job and social status" (Kouzes & Posner, 2003, p. 7). Leadership was needed to provide these members with a vision that defined current realities and offered a "sense of direction" for the "journey into the unknown" (Kouzes & Posner, p. 16).

2.2.1.5 Theories of Educational Change

During the contemporary period of change, educational organizations were also affected by change. Theories of educational change have differed over time. Sashkin and Egermeier (1993) outlined the key approaches as: (a) the rational-science approach to change emphasized in the 1970's, (b) the political approach to evoke change emphasized in the 1980's, and (c) the cultural approach that emphasized change as having meaning and value in the 1990's.

Two key themes for the direction of change in education were highlighted in the literature. One direction included the realignment of educational structure to meet the challenges of contemporary change-based times (Fullan, 1999; Hargreaves, 1994; Hargreaves & Fullan, 1998). The other direction included the development of teaching practices for the times (Goodlad, 1994).

Fullan (1993) indicated that change in education was "dynamically complex" (p. 18). Complexity arose as the processes for successful change were "to a certain extent unknowable in advance" (p. 18). Due to the environment of change, Drucker (1994) proposed a rethinking of education be conducted to:

> think through education—its purpose, its value, its content…
>
> to define the quality of education and the productivity of education,
>
> to measure both and to manage both" (p. 18).

Studies on educational change revealed strategies for success. Newmann and Wehlage's (1995) study of change indicated that:

> the most successful schools were those that used restructuring
>
> tools to help them function as professional communities… Schools
>
> with strong professional communities were better able to offer authentic
>
> pedagogy and were more effective in promoting student achievement
>
> (p. 3).

Overall, educational organizations were affected by change and required strategies to manoeuvre within the environment of change.

2.2.1.6 Educators -- Agents of Change

Educators were also challenged by contemporary change. Fullan (2001) suggested that "leaders in business and education face[d] similar challenges – how to cultivate and sustain learning under conditions of complex, rapid change" (p. xi). Fullan (1993, 1999, 2001) promoted educators as agents of change that needed to learn to deal with change as a normal component of an academics work life. Boyd and McGree (1995) positioned the educators as leaders in the process of educational change.

Fullan (1993) promoted leadership in education with the use of a dual approach. This dual approach included the educator and the educational system working in unison. According to Fullan (1993), "one cannot wait for the other. And if they are not working in concert, in particular settings, it is necessary to work on

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them separately looking for opportunities to make them connect" (p. 12).
However, in 1999, Fullan revealed a feeling that although new knowledge and
practices were being developed, "the education system [was] traditionally weak
at accepting and spreading new knowledge and practices" (p. 58).

Fullan (1993) introduced the concept of educational leaders that were "guided
by moral purpose" (p. 5). This purpose directed educators to be "concerned
with direction and results; understanding change, building relationships, and
knowledge building" (Fullan, 2001, p. 6-7). Moral purpose consisted of a
leadership commitment to

> inquiry, knowledge, competence, caring, and social justice
> [that went farther] than curriculum and classroom experiences….
> to the very heart of the moral ecology of the organization itself"
> (Fullan, 1993, p. 8)

Moral ecology included:

> A continuous preoccupation with making virtuous improvements
> in a world in which the particular pathways to success [were]
> literally unknowable in advance of doing something"
> (Fullan, 1999, p. 1).

In the concept of moral purpose, educational leadership included "the capacity
to seek, critically assess, and selectively incorporate new ideas and practices"
(Fullan, p. 44).

Fullan (1993) offered four educational leadership elements that were designed
to build "greater change capacity" (p. 12). The elements included "personal
vision-building, inquiry, mastery, and collaboration" (Fullan, 1993, p. 12). Each
element offered also "had an institutional counter-part: shared vision-building,
organizational structures, norms and practices of inquiry; focus on
organizational development and know-how, and collaborative work cultures"
(p. 12). The leadership and institutional elements were offered by Fullan as a
means to aid the advancement of successful educational change.

Fullan (1999) promoted that educational leadership needed to establish "a deliberate system of stimulating innovation" (p. 58). To aid in the development of innovations, Fullan suggested the use of theories to encourage leaders in education to think differently when facing change. Fullan suggested the use of two specific theories. The first was complexity theory, with the focus on complex interrelationships, interaction, and living systems. The second was evolutionary theory, with the focus on learning, adapting, and innovations within an environment of uncertainty. Fullan indicated that the two theories offered "powerful concepts that we need to add to our thinking" (p. 13).

In addition to his 1993 and 1999 work, Fullan (2001) advanced seven principles for use when leading educational change. The principles included: (a) it's about instruction and only instruction, (b) instructional improvement is a long, multistage process involving awareness, planning, implementation, and reflection, (c) shared expertise is the driver of instructional change, (d) the focus is on systemwide improvement, (e) good ideas come from talented people working together, (f) set clear expectations, then decentralize, and (g) collegiality caring and respect are paramount" (p. 57). Fullan promoted that educators could lead the way to improved practice in the contemporary environment of change.

Crowther (1996) recognized the concept of 'teacher leadership' as real and indicated that there was "historical failure of most educational administration theorists to recognise the full leadership dimensions in the work of some classroom teachers" (p. 319). The majority of the authoritative literature in the area of educational leadership concentrated on the administrators. Crowther (1996) called for devoted study of teacher leadership with the provision of "time, energy, and resources" (p. 319).

While the literature that concentrated on educational change was expanding, the conclusions for responding to change were not amalgamated into a singular focus. Clearly, the issue of responding to educational change was complex.

2.2.2 Context of Change--Summary

Change has impacted all aspects of contemporary society (Homer-Dixon, 2001). The literature indicated that change was infused within organizations (Schön, 1973) and that organizations adapted intentionally to change (Meyer, Goes, & Brooks, 1994). Educational institutions have been challenged by change, along with educators. The educators were positioned as agents of change; however, the selection of a direction for adapting to change was not easily determined in the complex environment of contemporary change.

2.3 Change Challenges Educators

Kapitzke (2000) stated that pressures for change have altered the overall context of university education. This environment of change demanded active and continuous learning (Hirschhorn, 1984; Sproull & Kisler, 1991). Educators have been challenged to continuously learn in order to respond to change.

2.3.1 Reflective Practice and the Challenge of Change

Schön (1983) indicated that the educator had the ability to be reflective. An ability to reflect and to question assumptions was declared an important element in the educators' skill-set (Posner, 1996; Mezirow, 1990, 1998). The outcome of "thoughtful practice, grounded often in uncertainty and uncertainties affective complement, anxiety, can become a generator of new knowledge" (Schön, (1994, p. 3). The challenge of contemporary change provided educators with many issues to reflect upon to advance learning and practice.

Schön (1987) described two types of reflection. Schön's reflection-in-action was determined to occur during an engagement and allowed one to "interrogate her/his thoughts or actions" (Barnett, 1992, p. 198). In contrast, reflection-on-

action happened as research participants reflected "in the present about a past event" (Power, 2002, p. 16). According to Brockbank and McGill (2003) reflection was a foundational action that aided to enhance educational practice.

Wellington and Austin (1996) revealed two orientations for reflection. One included reflection on society as the priority over the needs of individuals within the society. The other orientation included the rise of the individual as the priority within society. These researchers did not prescribe one orientation as better than the other. In fact, they indicated that the advantage of a reflective orientation depended on the specific context in which it was used.

Mezirow (1991) outlined that one could reflect on a variety of elements. Mezirow outlined that the reflection could concentrate on the content, process, and/or the premise.

Schön (2002) stated that there was a need to move reflection in a way that included "professional artistry." This movement was promoted as a means to be open to new reflective methods that advanced understandings and insights.

Not all researchers were convinced reflection was a positive activity for instructors. Included in the large body of literature on reflective practices were concerns about the use of reflection. Stein (2000) voiced concerns over the lack of standards for reflection in practice. No standards were provided to indicate a proper level of reflective activity. In addition, Brookfield (1994) stated there were risks associated with reflection. What if the reflection was negative? How was an instructor expected to respond?

Despite some concerns voiced on the use of reflection in practice, the literature promoted a variety of ways in which an educator could be reflective.

2.3.2 Reflective Practice as Professional Development

Learning could be advanced with the use of reflection (Abbott, 1994; Schön, 1983, 1987). Learning with reflection was considered a component of an instructors' personal development or professional development (Becher, 1996; Brockbank & McGill, 2003, Nicholls, 2001). Professional development was defined as "a dynamic process that span[d] one's entire career in a profession, from preparation and induction to completion and retirement" (Nicholls, 2001, p. 37).

A connection between professional development and change was made in the literature. Fullan (1991a) declared that an interrelationship existed between professional development within an educator's career and effective change processes in education. The interrelationship included a dependency between change and the educators' perspective concerning the impacts of change on educational life and practice.

Learning could be advanced with reflection as part of one's professional development. In addition, professional development was interconnected with change processes that were developed for the times.

2.3.3 Design Experiments in Response to Change

Design experiments offered educators the opportunity to explore and reflect in a manner that resulted in greater understandings and learning (Cobb, diSess, Lehrer, & Schauble, 2003). Erickson (2001) noted a growing trend in the area of experiments that considered the principles of design used in science classrooms. This inquiry supported a belief that this trend extended to multi-disciplined fields. This extension included the principles of pedagogical design for change-based times.

Erickson (2001) indicated that a trend in experimenting with the principles of design was different from the personally conducted research completed by instructors within a classroom. Design experimenters produced a growing body of educational research literature on design approaches that was distinct due to the efforts to advance the literature.

Cobb et al. declared that design experiments had the following purpose:

> To develop a class of theories about both the process of learning and the means that are designed to support that learning, be it the learning of individual students, of a classroom community, of a professional teaching community, or of a school or school district viewed as an organization (p. 10).

Cobb et al. indicated that pedagogical design experiments have informed the developers of theories of instruction for well over a century.

Design experiments have been utilized to advance learning by being "test-beds for innovations" (Cobb et al., 2003, p. 10). The experiments exposed "the possibilities for educational improvement by bringing about new forms of learning" (Cobb et al., 2003, p. 10). Learning had the potential to advance beyond simple knowledge transmission to being developed through organizing experiences within classrooms. In addition, learning had the potential to advance the creation of questions concerning the knowledge produced and its consequences (Giroux, on-line-undated). Design experiments offered learning opportunities with what Cobb et al. called "cycles of invention and revision" (p. 10).

Learning was needed to fill a gap in the educational literature revealed by Erickson (2001). This gap was in the area of contemporary instructional practices and integrating findings from the literature into classroom practice. Erickson stated that literature in this area was "still largely unfilled" (p. 20).

Design experiments offered educators a means to learn to respond to the challenge of integrating contemporary instructional practice with theories found in the literature. Design experiments offered the opportunity to develop new understandings with constructivist methods (Wilson, 1997). In this inquiry, a design experiment concerned the means to integrate the literature on theories of change into pedagogy for practical use.

2.3.4 Change Challenges Educators — Summary

Educators needed to find ways to meet the challenge of contemporary change. In an effort to respond to change and complexity, design experiments were one means to advance learning (Cobb et al., 2003). A growing trend in educational design experiments was revealed in the literature. Design experiments offered the opportunity to explore, reflect, and develop new understandings. Reflection and experimentation in designs were part of an educator's on-going professional development.

2.4 Creating the Change Infusion Model (CIM)

The literature outlined several premises concerning educators and the challenge of change. The first premise was that contemporary change impacted all aspects of society (Homer-Dixon, 2001), including education, educators and pedagogy. The second premise was that the environment of contemporary change demanded active and continuous learning (Hirschhorn, 1984; Sproull & Kisler, 1991). The third premise was that the learning required the construction of knowledge. These three premises were accepted for this inquiry.

The Research Problem for this inquiry was:

> *In what way(s), and to what extent, can university instructors incorporate change-based concepts in their pedagogical practices through the application of a conceptual framework?*

To address the research problem, a conceptual model was developed to assist university instructors to adapt pedagogy for the times. The model, called the Change Infusion Model (CIM), was developed as a means to guide university instructors to infuse characteristics of change within pedagogy. Research Question 1 guided the development of the model and was:

> *What are the features of a theoretical framework for adapting pedagogy to postindustrial change that surface from analyses of authoritative literature and research?*

The theoretical justification of the model was based on a speculative, innovative idea and cognitive-constructivist theory. The idea was founded in Gay's (1995) belief that pedagogical theories currently surpassed their implementation in the classroom. The innovative model promoted the concept that characteristics from contemporary theories of change could be infused into university pedagogy. The aim of the pedagogical infusion process used in the model was to help university instructors create an environment of change within the classroom that would simulate real-world change occurring outside the classroom. The speculation was that organizing principles of instructional or learning strategies could be adapted to emulate characteristics of theories of change and could stimulate the production of the conditions of change within the learning environment. It was contemplated that if an environment of contemporary change could be created pedagogically, then learning for this environment of change could be constructed. This learning included developed understandings and insights for change conditions.

The theoretical foundation for the CIM included the following:

- Constructivism was "constructed by us, each in our own way, according to how our understanding is currently organized (Duckworth, 1987, p. 112),
- Constructed interpretations were reflections of the learner's

sociocultural-historical beliefs and experiences (Prawat & Floden, 1994),

- A constructivist learning environment included a moderate interpretation of a radical-constructivist model that individual learning could be constructed within a learning community (von Glaserfeld, 1987),

- The ontological view included being an idealist, with the need for continuous pedagogical learning and adaptations,

- Experimentation included design flexibility that was emergent (Patton, 2002) that allowed adaptations to occur as understandings were realised and options were presented, and

- New understandings could be developed with constructivist pedagogical methods (Wilson, 1997).

The analyses of literature revealed several conclusions that were used to develop the framework of the CIM. The literature conclusions and the preliminary CIM are now presented. This is followed by a discussion on pedagogical results with the CIM, theories of change for use with the model, an explanation of the social, cultural, and historical influences on the model, and an example of the CIM in practice.

2.4.1 Gay's Theory for Infusing Change

Gay (1995) professed that, in pedagogy, the development of theories currently surpassed their implementation in the classroom. To combat this imbalance, she proposed the concept of *infusion* to help educational practice keep pace with advances in theory.

Gay (1995) described four stages of infusion: inclusion, infusion, deconstruction, and transformation. The first stage, *inclusion*, developed an awareness and understanding of the topic through presentation of relevant facts (Gay, 1995). The second stage, *infusion*, aimed to "systematically integrat[e] …

content, contexts, and viewpoints … to illustrate key concepts, principles, theories, and methods of inquiry from multiple perspectives" (Gay, p. 3). The third stage, *deconstruction*, included a review and breaking down of the theoretical elements (the elements in this case are theories of change) for examination. The deconstruction process was completed to develop knowledge for potential use in the final stage of infusion. The fourth and final stage, *transformation*, developed conclusions about how to apply theory to advance practice.

While Gay concentrated on multicultural education, in this research her infusion concept was applied to the development of pedagogy for change-based times. I saw the infusion of key characteristics of theories of change into pedagogy as a means to respond to contemporary change. Aspects of tertiary pedagogy to build the CIM were also used. These I review next.

2.4.2 Development in Tertiary Pedagogy

The intent of tertiary pedagogy was to foster lifelong learning. Tertiary pedagogy included a focus on the learner and, according to Lindeman (1961), there was no ending to education. Fischer (2000) emphasised participatory learning to best prepare the learner for adaptations that take place after the learning has occurred and to gain the ability to learn to adapt to new environments.

Tertiary pedagogy also involved the professional development of instructors over the lifetime of one's career. Wagner (1998) purported that tertiary pedagogy required openness to many kinds of conventional and unconventional strategies. Hence, the CIM trials during this inquiry offered a professional development opportunity for research participants to consider pedagogy as a strategy to adapt to the contemporary environment of change.

Tertiary pedagogy also included a movement that brought the world of paid work and the world of learning into a closer relationship (Newmann, Secada & Wehlage, 1985; Wagner, 1998). According to Christie and Ferdos (2004), an emphasis on the workplace environment within educational learning did not eliminate the strong tertiary concern for quality learning. This tertiary pedagogy relationship between the workplace and the learning environment was seen as an important element to be incorporated within the model. The use of contemporary theories of change was selected as a means of representing the environment of change found in the world of paid work. The infusion of theories of change within pedagogy was the selected means of relating the environment of change found in the work world and bringing this environment into the classroom.

2.5 The Preliminary Model – The Change Infusion Model (CIM)

To further develop the CIM, I used a series of steps as the process to guide instructors to adapt their pedagogy for change-based times. The steps offered a means of explaining the actions to be completed when utilizing the CIM. The steps were provided a number as a means of naming each step (i.e. Step 1).

Each step was designed in accordance with the conclusions offered in the authoritative literature. The resulting model was comprised of three cognitive steps *about* change (Steps 1 to 3), which laid the foundation for two constructivist steps *for* change (Steps 4 and 5). To illustrate the position of the first three steps as foundational, these steps were placed at the bottom of the model. The constructivist steps were then positioned above the cognitive steps. The resulting five steps in the CIM are outlined in Figure 1 below:

Figure 1: The Preliminary Change Infusion Model.

Constructivist Steps

Step 5: Explore implications for adapting pedagogy for
postindustrial change: Apply key characteristics you
choose from theories of change to your pedagogy to
adapt it for postindustrial change.

↑

Step 4: Rethink pedagogy: Explore your personal views of how
theories of change can be utilized to change your
pedagogy.

↑

Cognitive Steps

Step 3: Develop an understanding of contemporary theories of
change.

↑

Step 2: Personalize change knowledge: Value differentiated
knowledge for potential advantage—called flexibility
effect (Conner & Prahalad, 2002)

↑

Step 1: Confront pedagogical complexity: Agree to consider
infusing key characteristics from theories of change
within pedagogy as a potential response to contemporary
change-based times that are creating a fundamentally
new environment—for work and life.

The literature used to design each step within the model was outlined below.

2.5.1 The Cognitive Steps in the CIM

The application of the cognitive theoretical perspective resulted in the creation of three cognitive steps in the model. According to Bednar et al. (1995), the cognitive perspective provided a prescriptive influence. The cognitive steps were thus designed with the cognitive prescriptive influence that encouraged consistent actions to be completed by each individual utilizing the model. These initial steps aimed to encourage the development of knowledge about change in a consistent manner.

The first step in the CIM (called Step 1) asked instructors to acknowledge contemporary change and sought their agreement to adapt pedagogy for postindustrial change. The actions to be completed in Step 1 were designed with the application of Gay's (1995) first stage, *inclusion*, and encouraged instructors to develop an understanding of the context of contemporary change.

To complete the acknowledgement of change, educators had to first understand that they operated within what Lewin (1951) concluded was an environment or "life space" that included many forces (Askew & Carnell, 1998). I then incorporated the work of Senge (1990), who concluded, "No one has more sweeping influence than the designer" (p. 341). Step 1 of the model, thus, emphasized the instructor as a designer of pedagogy who personally decided to adapt to change. Of course, according to Getzels & Guba (1957), instructors needed to ensure that changes they made were acceptable within their educational settings. This position by Getzels and Guba, although made decades ago, was seen as still relevant today.

Additional conclusions gleaned from the literature were used to support Step 1. To begin, Freire (1970) concluded: "each historical site requires the development of a pedagogy appropriate to that setting" (in Askew & Carnell, 1998, p. 65). Although Freire was referring to pedagogy for the oppressed, an interpretation of Freire's statement meant that instructors could change their

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pedagogy. In this case, pedagogy was adapted for contemporary changing times. Peters (1987) also concluded that managers in organizations must advance learning to better manage under current conditions. Although Peters was talking about the general business environment, his conclusion was seen as being applicable to the field of education. An application of Peters' statement indicated that educators must advance their learning to manage education in contemporary times.

The application of the literature above was used to create Step 1 in the CIM. The first step in the CIM was determined to be: Confront pedagogical complexity: Agree to consider infusing key characteristics from theories of change within pedagogy as a potential response to contemporary change-based times that are creating a fundamentally new environment—for work and life.

Step 2 in the CIM was determined to be--Personalize change knowledge: Value differentiated knowledge for potential advantage—called "flexibility effect" (Conner & Prahalad, 2002, p. 105). The second step in the model continued to apply Gay's (1995) first stage of infusion, *inclusion*, for an encouraged understanding of change by instructors. I drew on conclusions in the work of Brockbank and McGill (2003) and Salmon (1989). These authors argued instructors' personal beliefs influenced both learning and teaching practice. Conner and Prahalad (2002) called the personalization of knowledge the *flexibility effect*. This effect was achieved when instructors acknowledged their personal perspectives, opinions, and approaches. Thus, in Step 2 of the model, I encouraged instructors to nurture new interpretations of ideas in order to adapt their pedagogy to postindustrial change —to utilize their flexibility effect.

Step 3 in the CIM was determined to be--Develop an understanding of contemporary theories of change. In step 3, I applied Gay's concept of *infusion*, to encourage instructors to learn about theories of change. However, the literature did not provide a starting point for understanding theories and

determining the key characteristics within the theories. I decided that the starting point for theoretical understanding needed to be determined by individual instructors working with the CIM. This allowed multiple theories to be considered for use with the model. Zack's (2002) conclusion was used to guide the selection of any theory of change for use with the CIM. Zack stated that a theory had to be "currently believed to be actually happening and [that] the trend will shape the future environment" (p.260).

My decision to allow instructors to select the theories of changes they wanted to apply within the CIM was supported by the work of Zack (2002). He purported that one must develop personal knowledge in order to create competitive advantage. In this research, I interpreted Zack's statement to mean personalizing one's understanding of theories of change can advance the creation of personal knowledge. This personalization improved one's ability to design new pedagogical options. Accordingly, the dissertation research committee vetted the theories of change utilized in Step 3 by the research participants in this inquiry; however, the criteria for selecting a theory, and the types of theories available for use with the model were open to change and were discussed further in Section 2.7: The CIM and pedagogical results.

The first three steps in the CIM were cognitive in nature. I then moved to develop the constructivist steps of the model that encouraged a rethinking of pedagogy for contemporary times.

2.5.2 The Constructivist Steps in the CIM
The CIM was intended to move instructors beyond teaching *about* change by simply presenting to their students the work of researchers and theorists who write about change, to rethinking pedagogy to teach *for* change.

The constructivist perspective was used to develop two constructivist steps in the model. According to Doolittle and Camp (1999), "the essential core of

constructivism [was] that learners actively construct their own knowledge and meaning from their experiences" (p. 5). The model constructivist steps were designed to encourage instructors to actively construct pedagogy with a rethinking experience. According to Patton (2002), the constructivist influence encouraged the development of meaning with "interpretive understandings" (p. 114). The constructivist steps thus allowed the construction of a model that included the ability to interpret what pedagogy could be in contemporary times. Individual instructors and their developed knowledge, perspectives, and opinions could personally influence the design of pedagogy for the times.

To begin Step 4, I applied Gay's (1995) *deconstruction* stage. In this step, instructors were encouraged to deconstruct or break down theories of change to determine their key characteristics. An exploration of the theories was used to determine the key characteristics. I incorporated Slattery's (1995) conclusion in this exploration that it is learners who must construct meaning. In this case, the meaning of the theory of change was defined by its key characteristics. Meaning was seen as being aided with the use of reflection. Instructors were expected to explore and reflect on the theories to construct their meaning, created through reflection.

I drew on the conclusions of Chin and Benne (1969) when selecting reflection as a means of constructing knowledge. Chin and Benne described two categories of change as approaches for the implementation of change. One, the *empirical-rational* category, established that people could act independently of their current educational environments. Chin and Benne's *normative-reeducative* category of change showed that one could develop new orientations by modifying one's own attitudes, skills, relationships, and knowledge. An application of Chin and Benne's conclusions to the constructivist steps in the model led me to believe that educators could reflect and derive meaning that could aid in an independently designed pedagogical approach. This

independent act was seen as still being able to interdependently meet the requirements of the educational systems in which educators work.

Step 4 in the CIM was determined to be--Rethink pedagogy: Explore your personal views of how theories of change can be utilized to change your pedagogy. Step 4 utilized a conclusion from Symes and McIntyre (2000) when determining how one might explore. These researchers concluded that one could self-direct an exploration through the development of self-created questions. In this case, the instructors ask themselves questions about the characteristics within the theories of change and how they may be used within their pedagogy. Following the conclusion of Spender (2002), instructors themselves judge the value of the meaning developed. In this case, the value concerns the reflection on the theories' characteristics and their potential use within pedagogy.

The fifth and final step in the CIM was Step 5: Explore implications for adapting pedagogy for postindustrial change: Apply key characteristics you choose from theories of change to your pedagogy to adapt it for postindustrial change. I used Gay's *transformation* stage to create Step 5, in which instructors explore the application of theories of change to their own pedagogy. Their ability to rethink and adapt their pedagogy was based on the development of a new awareness of theories of change and the pervasiveness of change in pedagogy. In this step, instructors decided which, if any, characteristics from theories of change they could use to reorganize their pedagogy. This final step in the model was designed to encourage instructors to apply selected key characteristics from theories of change to their pedagogy for use in practice. The framing of instructional and learning strategies used in practice with characteristics from theories of change allowed instructors to create a context of postindustrial change. Working (or completing instructional and learning strategies such as a written assignment) in an environment of change in the classroom was a speculative idea to encourage insights for change.

An example of the CIM in practice is outlined in Section 2.8.

2.6 The CIM and Pedagogical Results

Consistent pedagogical results were not expected from the rethinking process in the CIM. Each instructor completing the rethinking of pedagogy could derive options and strategies for adapting pedagogy that were personally conceived. The rethinking of pedagogy was not a search for correct answers. There was no one correct answer for rethinking pedagogy for contemporary times. The correct pedagogy was an unknown.

Rethinking pedagogy in response to contemporary change was not expected to be a simple task. Gardner, in 2001, expressed frustration due to the fact the "issues of pedagogy turn out to be as vexed as issues of curriculum/content" (p. 1). Adapting pedagogy was considered to be "much more elusive, much more difficult to bring about" (Gardner, 2001, p. 2) than one may desire. Rethinking pedagogy with the CIM was not expected to be a simple task without issues, paradoxes, and tensions.

In this inquiry, the difficulties revealed when adapting pedagogy were not accepted as an element that precluded instructors from developing new pedagogical strategies for postindustrial change. Instructors were situated in a contemporary world that demanded continuous learning and difficulties in learning and the application of learning to pedagogy were not seen as reasons that stopped precluded educators from working to adapt pedagogy. In the face of difficulties, educators must learn to advance pedagogy for the times.

The CIM was a new strategy for guiding instructors to adapt pedagogy for contemporary change-based times. If the rethinking guided instructors to institute the learning for an adapted pedagogy, the resulting pedagogy was considered to be autobiographical. The pedagogical outcomes were ascribed

meaning by the instructor. At the end of the CIM process, instructors decided whether the model achieved its aim, and whether the rethinking developed options that allowed theories of change to be infused within pedagogy to express contemporary change. The individual instructor, situated within the educational system, determined the impact of the rethinking on pedagogy.

2.7 Theories of Change for Use with the Model

No one theory encompassed all of the elements of change. Hatch (1998) emphasized that:

> There never will be a definitive theory of change. It is a
> theoretical and empirical impossibility to generate a theory
> that applies to all situations (p.35).

Therefore, I decided that the CIM must be open for the use of a wide variety of theories of change. In doing so, the potential pedagogical responses to postindustrial change could vary due to the key characteristic of theories of change utilized.

To be selected for the CIM, a theory of change had to be "currently believed to be actually happening and [that] the trend will shape the future environment" (Zack, 2002. p. 260). Consequently, I chose two theories, Complexity Theory and Contingency Theory, to profile in the participant information package (found in Chapter 5) for instructors interested in learning the CIM. However, these two theories, along with many other theories could be used with the CIM; for example:

Complexity Theory: The world is complex. The environment is in a pivotal state (Doherty & Delener, 2001) with conditions of "uncertainty, diversity and instability" (Stacey, 1996a, p. 349). A stable state is not achievable because the "world is primarily made of dissipative structures" (Keirsey, 2003, p. 4). According to Doherty and Delener, the structures are constantly evolving and

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being pulled apart and refitted by the forces and cannot be expected to be in "equilibrium" (Keirsey, p. 4).

Contingency Theory: One system of organization cannot be found that "is superior to all others in all cases" (Owen, 2001, p. 399). Thus, organizational structure should be based on the particular environmental needs. The "mechanistic" system of structure allowed for "centralised control, format and hierarchical structure… and person-to-person control" (Limerick et al., 1998, p. 38). The "organic" system of structure allowed for a flexible group structure with the people in the network as the priority (Burns & Stalker, cited in Limerick et al., 1998). The organic format may present an advantage in a change-based environment (Hout, 1999) with an ability to be open to repeated manipulations and restructuring (Emery & Trist, 1973; Weick, 1979).

Interpretive Theories: Within interpretive theories, perceptions of a particular situation or issue can be altered (Harper, 1993). Interpretive theories assert that "change does not happen automatically…but [requires] people [to] redefine situations…and [then] alter social behaviour accordingly" (p. 106).

Evolutionary Theories: Evolutionary theories assumed that change was a response to environmental circumstances (Morgan, 1986). Kezar (2001) said that evolutionary theories guide one's understanding of the "impact of environmental factors … such as accreditation, foundations, and legislatures in an interdependent system" (p. 3). Evolutionary theories supposed certain principles, "especially in relation to interaction and cooperation behaviour (Fullan, 1999, p. 6). Interactions, and diversity within interactions, have been shown to be "suited to discovering… effective solutions to problems presented by turbulent environments" (Fullan, p. 11).

Political (or Dialectical) Theories for Social Change: These theories asserted that change results from ideologies (Morgan, 1986). Political–social change

theories develop understandings of social structure and create change through social interaction (Conrad, 1978; Hearn, 1996).

Offering multiple theories of change within the CIM allowed instructors to benefit from the multiple perspectives and insights within the literature (Bolman & Deal, 1991; Kezar, 2001; Morgan, 1986; Van de Ven & Poole, 1988).

As stated above, individual instructors chose which theories they used with the CIM. In addition to the above theories of change, *forces of change* may be infused into pedagogy using the CIM. Examples of forces of change included the following:

The Dispersed Domain: This force of change involves learning to organize and manage issues, people, and activities without being confined by the walls of an office or the borders of any country (Duarte & Snyder, 1999; Grant, 2001; Jarvenpaa & Leidner, 1999). Dispersed workers were free to work from anywhere in the world, supported by computers and the internet. In the dispersed domain, anyone could be an "electronic immigrant" (Beck, 1998, p. 3). The constraints and permanency of the office are gone. The dispersed domain requires the ability to work without physical proximity, within an environment that is organized specifically to fit the needs of the moment. This includes the use of structural networks and flexible loose couplings (Lewin & Regine, 2000). The structure is designed for efficiency in obtaining information, managing information and people, communicating within the network, and maintaining networks relations. Fullan (2001) suggests that for success, it is the "relations that make the difference" (Fullan, 2001, p.51). Being unconstrained by permanency, the priority of the dispersed domain is what Limerick et al., (1998) revealed to be "process of organising" (p. 212).

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Support Systems for Individual and Group Success: The impact of changing environments on people is an unknown. Several researchers, concerned about this impact, stated (a) "Our society is going to be running an interesting experiment" (Thorow, 1998, p. 26), (b) "The higher complexity is making many of our social and economic hierarchies unworkable " (in Homer-Dixon, 2001, p. 120), and (c) No collective force is pulling societal support systems together to work through change (Drucker, 1994). Handy (1996) proposes a rethinking of organizations to support societies in change.

The theory of change or force of change selected for use with the CIM was determined by the instructor.

2.8 Social, Cultural, and Historical Influences on the Model

The selection of theories of change or forces of change for use with the CIM is influenced by the individual's social, cultural, and/or historical background. The backgrounds of all instructors provide influence on the social relations, values, practices, and consciousness of ideas (Collier, 1994; Harvey, 1996). These influences affected decisions, understandings, and knowledge and could be both overt and concealed.

Pashke (2003) described cultural influence as an analytical thinking process that differed among cultures. Pashke stated that Western philosophy embraced models, while Eastern philosophy proposed, "that model[s] cannot capture reality, that one can't capture the uncapturable" (Pashke, p. 49). Nonaka and Takeuchi (1995) found that Japanese culture emphasized collective effort, while Western cultures emphasized individual effort. Hampton-Turner and Trompenaars (1997) supported these finding with their conclusion that East Asian cultures emphasized collaboration, unlike Western cultures.

Overall, cultural influences affected learning. Members of a society generally developed similar values that formed the foundation of the culture (Hofstede,

1984). Learning, therefore, depended upon a cultural context (Vygotsky, 1978). A cultural context, in turn, influenced individual perspectives and orientations (Hampton-Turner & Trompenaars, 1997).

Historical experiences of change also influence individual perspectives on change—whether it is within the educational system or within government, unions, or the economy. Instructors' perspectives may also have been shaped by their experience with educational administrators, with the programs in which they teach, with course changes, or even by program directives that may have been imposed on them. To add to the complexity of historical influence, an instructor may move from one historically influenced environment to another by changing institutions.

Influenced by their social, cultural and historical backgrounds, instructors' perceptions in turn affected their pedagogy (Giroux, 1992; Wallace, 1996). This effect on pedagogy was not expected to be transparent, however. The influence of individual instructor's backgrounds mixed with influences from other groups within a society that one associated with, creating a combined conscious-and-unconscious power over instructors' personal understandings, perceptions, and responses to change.

Thus, social, cultural, and historical influences underpinned instructors' use of the CIM. These influences were combined to affect (a) instructors' understanding of the model, (b) the theories of change selected for use with the model, (c) their decision to infuse theories of change within their pedagogy, and (d) the strategies they develop for infusing key elements of change theory into their pedagogy.

2.9 An Example--Using the Change Infusion Model in Practice

Figure 1.0 outlined the response to Research Question 1 and included a conceptual model to encourage educators to integrate theories of change within pedagogy. The model was derived from analyses of authoritative literature and research. In an effort to offer a further method to develop a fuller understanding of the model, a hypothetical example was developed. The example of the CIM in practice was initially included in the participant information package used in the trials to aid the understanding of the research participants that engaged with the model. The researcher and Research Committee refined the example over the course of the research trials. In an effort to eliminate repetition in this dissertation, the final example of the CIM in action was developed is stated below:

A group of instructors in this hypothetical example are interested in using the CIM to construct/reconstruct pedagogy for postindustrial change met to begin the process. First, they read the CIM Participant Information Package (PIP) material on Step 1 (see Chapter 5 for the refined package). This step encouraged instructors to examine their present thinking and began with the acceptance of the premise that change was a common, normal force in education and in life. If the instructors accepted the premise in Step 1 and decided to consider rethinking pedagogy to incorporate theories of change, they moved to Step 2.

The instructors then read the participant information package material on Step 2. This step encouraged instructors to be conscious of, and to continuously nurture, their own ideas for use in pedagogy for contemporary change. This step reminded instructors that no one outcome was expected from the engagement with the CIM. Many options could be developed and all were potentially valuable. Personal interpretations were encouraged for their produced insights that were potentially applicable for adapting pedagogy for the times.

Instructors then moved to Step 3 in the CIM. In this step, instructors read the material offered on complexity theory and contingency theory in the participant information package. They went back to their higher-education institutions and engaged with these two theories by conceptually relating the theories with their course. The engagement with the two theories focused on the instructor, not the students. The aim of the engagement was to (a) develop the instructors' understanding of the theories as they related to the course content and (b) to determine key characteristics within the theories. An instructor decided how much time was needed to learn about theories of change—in this example the time provided was one month. It was important to note that the theories of change were appropriate for application with a wide variety of courses, but may not be for all courses.

After one month, the instructors in this example reconvened. They decided that they had completed Steps 1 to 3, the CIM's cognitive steps in the model. They began Step 4 by reviewing the material offered on that step in the participant information package. In this step the instructors explored the potential relationship between key characteristics from the two theories of change and pedagogy. They used self-directed questions to examine the implications of infusing key characteristics from complexity theory and/or contingency theory into pedagogy. They considered whether to use theoretical characteristics to reframe an instructional strategy they currently use, such as a written assignment.

To complete the exploration, the instructors collaboratively selected the following key characteristics from the theories:

Dissipative structures were selected as a characteristic of complexity theory. In dissipative structures, elements were constantly being pulled apart and reconfigured; equilibrium was not expected (Keirsey, 2003). The instructors

discussed how one could learn to be comfortable with structural change by expecting change, by being open to adaptation for change, and by practising responses to structural change.

Repeated organizational restructuring was selected as a characteristic of complexity theory. In repeated organizational restructuring, one must choose the best organizational system based on needs at the particular time of the change (Doherty & Delener, 2001). The instructors discussed traditional organizational structures, as well as flexible, organic organizational structures that facilitated quick and repeated organizational restructuring.

After selecting the above two characteristics, the instructors continued through Step 4 by exploring ways of expressing each of the characteristics. They discussed their own perspectives on the relationships between the two characteristics and pedagogy. The instructors determined individually whether they valued the characteristics—whether they could use them to frame instructional and learning strategies. To aid in the decision, the instructors collaboratively decided to use dissipative structures (the characteristic from complexity theory) as pedagogical organizing principles to respond to structural change.

The instructors applied the concept of dissipative structures to a learning strategy, in this example a written assignment. They discussed where and how one could infuse the characteristic of constant structural change into the learning strategy, along with what would be needed to do so, how effective the infusion would be, and its potential consequences. There were no right or wrong answers in this exploration. The instructors gave themselves one month to conceptually complete the exploration.

When the instructors reconvened, they reported how they individually conceptually determined that the written assignment could be adapted to

express the concept of dissipative structures or structures that were constantly being reconfigured.

The instructors concluded that a three-phase assignment format could incorporate the condition of change seen in dissipative structures. The assignment was adapted as follows:

Assignment Phase 1:   This phase was completed in a group of 4 where members 1 and 2 worked together as a pair and members 3 and 4 worked together as a pair. The pairs completed a similar assignment topic used in past semesters. Two-person partnerships of students prepared an operational plan for accommodating athletes and officials at a national hockey championship. They submitted their plans to the instructor.

Assignment Phase 2: At this point, the structure of each partnership changed: one student remained in each partnership while the other switched partners. Therefore, members 1 and 3 worked together and members 2 and 4 worked together. The resulting partnerships required students to be open to restructuring. The restructured partnership now adapted and advanced the initial assignment submission (in this case the assignment advanced was from members 1 and 4 phase 1 submission). Each group was required to adapt the assignment due to a fire in a key accommodation site. Each new group of two needed to determine how they would proceed to manage to advance the assignment for the changed condition. The changing structure of the partnership challenged students to develop an understanding of the details of the plan and to negotiate the elements to advance the assignment. Each pair submitted its revised operational plan to the instructor.

Assignment Phase 3: The two pairs now combined to form new groups of four. Each group of four members compared the two plans submitted in Phase 2. Each group of four members analyzed the plans for (a) the priorities of the

Phase 2 submissions and (b) the consequences of the choices. The analysis included (a) the decisions made, (b) the communication process utilized, and (c) reflections on the work relationships in a changing group structure. In addition, each group prepared an overview of the plans their group members created for the fire scenario. Each group submitted their report to the instructor.

Overall, the three-phase assignment put organizational restructuring into action. The students had to work through the conditions of dissipative structures, a key characteristic from complexity theory. The unexpected disequilibrium created by the changes in Phases 2 and 3 required students to restructure their groups. The pedagogical framing of the assignment with change presented the challenge of change within the assignment. The assignment was *about change* but the pedagogy created a context of change to encourage insights *for change*.

Next, the instructors moved to Step 5 in the CIM. In this step the instructors conceptually determined the application of a pedagogy adapted for change. This group of instructors agreed that pedagogy could be adapted with the infusion of characteristics of theories of change. The instructors believed the example above could be used in practice-- but not immediately. Prior to instituting the pedagogical adaptation, changes on the written assignment were required in the course syllabus and training the Teaching Assistants was also required. This group of instructors planned to restructure the course syllabus and train the Teaching Assistants for the time the course was offered (next year). They agreed to infuse a written assignment with characteristics from theories of change.

In this example instructors engaged with the CIM and completed a rethinking of pedagogy for the times. The instructors moved to go beyond simply teaching about change or using change scenarios in their teaching to a pedagogically created context of change that encouraged development of insights for change.

2.10 Summary

In this chapter, an overview of the authoritative literature establishes a context of contemporary change and then analyses of the literature on change are used to develop the preliminary Change Infusion Model (CIM). The model is developed in response to Research Question 1: *What are the features of a theoretical framework for adapting pedagogy to postindustrial change surface from analyses of authoritative literature and research?* The CIM is created for instructors at the higher education level that are interested in rethinking pedagogy for contemporary change. The model aims to build instructors' ability to infuse key characteristics from theories of change into teaching practice.

The preliminary CIM incorporates Gay's (1995) stages of infusion, the cognitive and constructivist perspectives, and conclusions from the authoritative literature. The model encourages instructors to reflect on theories of change and to rethink pedagogy for the times.

This chapter concludes with a hypothetical example of how a group of instructors might work through the steps of the CIM and how classroom practice could change as a result of the model.

It is important to note that adaptations to the preliminary model will be made after the research trials are presented. A refined model is presented in Chapter 5. The refined model presentation includes the participant information package used to explain each step in the model. This package is only presented with the refined model to reduce repetition in this document.

Chapter 3 follows this chapter and provides an overview of the methods utilized in the CIM conference survey and three stages of research trials.

CHAPTER 3: METHODS

3.1 Introduction

The research methods for the development of the Change Infusion Model
(CIM), the survey conducted at an international conference and the engagement
with the model by the research participants are described in this chapter. The
descriptions cover the following components: (a) the orientation of the inquiry,
(b) the research questions, (c) the data collection strategies, (d) the data analysis
strategies, (e) the research sample, (f) the ethics clearance, and (g) the criteria
for accuracy.

The rationale for this study included that we live in a complex societal
postindustrial change-based time and an educational response is needed for
keep professional practice to remain emergent and relevant for the times.

A table providing an overview of the orientation and methodology of the study
is offered to aid understanding the research process:

Table: 3.1.1 Overview of the Methodology

Orientation of the Inquiry
The research orientation for this inquiry utilized mixed methods and was grounded within a cognitive-constructivist theoretical foundation and encouraged the construction of meaning concerning a pedagogical response to postindustrial change.
Design flexibility included an emergent design (Patton, 2002) that allowed adaptations to occur within the inquiry as understanding were revealed as the trials progressed
Participants
<u>Conference Participants</u> – attendees at an international conference presentation on the preliminary CIM and responded to the survey on the model. The "purposeful sample" (Patton, 2002, p. 242) included seven participants.
<u>Research Participants</u> – instructors at the higher education level in a variety of departments that participated in the research trials. A separate group of research participants were utilized in each of the three stages of trials. Each stage of trials began with six or more research participants; however, each stage had three research participants complete all of the components required for the trials. The trial research participants were referred to by a code name. For example Stage 1, participant number 1 was referred to as S1-1.
Data Collection and Analysis Methods and Timeline
<u>Conference Survey</u> - survey distributed at the end of an international conference on the CIM elicited data on the responses concerning the current understandings and uses of pedagogical tools. Survey design was based on two forms of reflection referred to by Mezirow (in Nicholls, 2001) as premise reflection (p. 65) and process reflection (p. 64). Data analysis examined how conference participants constructed their reality (Patton, 2002) around their experiences with

the CIM.
Research Trials - Guided Record Method – a written response to reflective statements on the CIM and its use. Guided Record data was collected from research participants in all 3 stages of trials via a written submission to the researcher at the end of the engagement with the CIM. The guided record reflective statements were used to elicit a response and were framed with the four dimensions of reflection outlined by LaBoskey (cited in Bain, Ballantyne, Packer, & Mills, 1997, p. 4), and were (a) the purpose, (b) the context, (c) the procedures, and (d) the content. The analysis of the guided records included constructing meaning based on the reflection types provided by Mexirow (cited in Nicholls, 2001). The analysis was based on the constructivist view of an interpretation that was centred on the reader (Habermas, 1979; Roseneau, 1992).
Research Trials - Collaborative Discourse Method - collaborative or a group discourse method whereby central questions were used to stimulate research participants to express understandings, comments, opinions or meaning. The collaborative discourse was tape recorded and transcribed into text.
The analysis of the collaborative discourse was aided by "sensitizing concepts" (Patton, p. 391), including pre-established concepts for analysis that provided "a general sense of reference and… directions along which to look" (Blumer, 1969, p. 148, cited in Patton, p. 391). "Evaluation questions" were used to guide the meaning of the discourse to evolve.

Table 3.1.2: Overview of the Timeframe and Research Activity

Timeframe	Research Activity for the Survey at an International Conference
CIM presented at a 5-day international conference	Survey was collected and analyzed prior to the research trials.
Timeframe	Research Activity for the 3-Stages of Research Trials
1 academic semester of time	The Stage 1 trials were conducted with the use of a guided record method of data collection. The research participants met with the researcher individually to discuss the requirements of the research.
Followed by 2 academic semesters of time	The Stage 1 data was analyzed and the CIM was refined. The analysis revealed that additional methods were required in order for research participants to understand and utilize the CIM as a pedagogical strategy. A collaborative discourse or meeting method was introduced for the stages 2 and 3 of the research trials. The collaborative discourse method consisted of the researcher and research participants engaging collectively with the research participants about the CIM. The analysis was also used to revise the CIM for use in the Stage 2 trials.
Followed by 1 academic semester of time	The Stage 2 trials were conducted with the use of a guided record method and a collaborative meeting method. The revised CIM was used for this stage of trials.
Followed by 3 academic semesters of time	The Stage 2 data was analyzed and the CIM was refined. Based on the data analysis, the guided record reflective statements were revised for the Stage 3 trials for the purpose of clarity. In addition, the CIM was revised for use in the Stage 3 trials.
Followed by 1 academic semester of time	The Stage 3 trials were conducted with the use of a guided record method with the revised reflective statements and a collaborative meeting method. The next stage of revised CIM was used for this stage of trials.
Followed by 2 academic semesters of time	The Stage 3 data was analyzed and the CIM was refined. The refined CIM is described in Chapter 5.

3.2   The Orientation of the Inquiry

The research orientation for this inquiry utilized mixed methods and was grounded within a cognitive-constructivist theoretical foundation. According to Patton (2002), the use of a cognitive-constructivist foundation offered the ability to guide "how people in particular contexts… individually and collectively construct meaning and knowledge" (Patton, 2002, p. 78).

Support for the cognitive-constructivist stance used in this inquiry was found in the work of Dewey (1933) and Piaget (1951). Dewey, in his *Theory of Experience in Education,* promoted learning by doing. Dewey demonstrated that theory and practice could be combined as elements that contributed to the growth of an individual. Dewey's (1933) belief that theory and practice could be combined was implemented as the CIM guided the rethinking of pedagogy for contemporary change-based times. Theory utilized was based on key characteristics from theories of change. Practice included the construction of pedagogy for postindustrial times. Theory and practice were combined when the key characteristics from theories of change were conceptually infused into pedagogy with the use of the CIM.

The cognitive-constructivist orientation was further supported by Michelson's (1996) summary of Piaget's constructivist view that learning was constructed knowledge produced through an interaction with the environment.

The use of a cognitive-constructivist orientation for constructing meaning of a pedagogical response to postindustrial change allowed the strengths of the two methods to be combined in this inquiry. The assumptions of the strengths of the cognitive method used in this inquiry included the ability to train research participants to do a task consistently (Schuman, 1996). The cognitive orientation was expressed in this inquiry through a variety of elements that included the pre-established questions for the conference survey questionnaire,

the design and methodology chart that guided the trials' data collection and analysis, and a series of steps within the CIM.

The assumptions of the constructivist method incorporated in this inquiry were supported by Patton (2002) and included the ability to develop understandings that were interpretive and based on the context and purpose. The constructivist method allowed for interpretations to be created by the constructor and, importantly, allowed the use of "emergent design flexibility" (Patton, 2002, p. 40). This flexibility allowed adaptations to occur within the inquiry as understandings were revealed in the guided records and collaborative discourse produced in each stage of the trials. Flexibility allowed adaptations to the CIM and participant information package on the model to be made as understandings were revealed during the research trials. Patton (2002) and Bednar, Cunningham, Duffy, and Perry (1995) supported the use of the constructivist orientation as appropriate for the development and interpretation of texts.

In this inquiry, central questions were used to stimulate research participants to express understandings, comments, opinions, or meaning of the CIM. Patton (2002) supported the use of central questions as a constructivist method that aided an exploration of participant perceptions. The researcher, along with the Doctoral Research Committee, developed the central questions that were utilized. Questions were developed for the collaborative discourse and the discourse analysis while reflective statements were developed for the guided record method. The questions and reflective statements stimulated research participants to record their perceptions in writing. The collaborative discourse questions guided the discussions with the researcher that were audio taped and translated into text. The analysis of the text was guided by the discourse analysis questions developed for this inquiry.

Central questions were used to guide research participants to reflect to determine their perceptions on the CIM. Reflection was a means of linking

theory to practice (Calderhead, 1988) and offered the potential to advance learning *(*Abbott, 1994; Brockbank & McGill; Schön, 1983, 1987). In this inquiry, reflections were on theories of change for use in pedagogical practice and learning concerned a pedagogical response to postindustrial change. Both the reflection-in-action and reflection-on-action were utilized.

The intent of the reflection was to draw on the mental modes of instructors in order to delineate current practice and what one envisioned for a reconstructed pedagogy for postindustrial times. In this inquiry, the reflection included knowledge on "the conceptual structures and visions… [that] provide teachers with reasons for acting as they do…. [and] under gird and guide teachers' appreciations, decision, and actions (Sanders & McCutcheon, 1986, pp. 52-53). Reflection included inherent difficulties due to the personal nature of tacit knowledge and the challenge of expressing the knowledge.

Underlying the use of reflection in this inquiry was a belief that tacit knowledge is personal (Marland, 1998; Conner & Prahalad, 2002). According to Polyani (1966), components of one's tacit or conceptual knowledge are intertwined within all knowledge held by an individual. Polyani (1966), Ritchie (1998), and Winter (1987) proposed that tacit knowledge was constructed through personal experience. The personal construction of tacit knowledge produced a state whereby "no two individuals possess identical stocks of knowledge" (Conner & Prahalad, 2002, p. 108). In addition, Spender (1996) expressed that tacit knowledge combined with one's theoretical knowledge to advance overall knowledge.

Due to the personalization of tacit knowledge, obtaining the expression of an individual's tacit knowledge or practical theories was deemed a challenge (Fullan, 1999, 2001; McIntyre & Hagger, 1993; Nonaka & Takeuchi, 1995; Szulanski, 1996). Tacit knowledge is not easily communicated, although it was determined that tacit knowledge could potentially be "shared through

externalization" (Leonard & Sensiper, 2002, p. 485). According to Grant (2001), in some cases, only a portion of the tacit knowledge may ever be revealed. Spender (1996) explained that the difficulty in communicating tacit knowledge was due to the fact that generally tacit knowledge was an unknown and had "not yet [been] explicated" (p. 58). Boisot (2002) stated that even during attempts to expose one's tacit knowledge, "much tacit knowledge inevitably stays with its possessors whatever the effort" (p. 71).

This inquiry followed the stance offered by Boisot (2002) that the context provided an anchor for one's knowledge; thus, methods that examined the context may reveal tacit knowledge. Marland (1998) proposed that once tacit knowledge was revealed, changes in tacit knowledge could be completed; but only the tacit knowledge owner could make the change. Ritchie (1998) suggested that changes to tacit knowledge could be made with the use of reflective practice.

Reflection was offered as an opportunity for professional development in the area of pedagogy. The definition of professional development used in this inquiry was based on the work of Nicholls (2001). Nicholls proposed that professional development for educators was "a dynamic process that spans one's entire career in a profession, from preparation and induction to completion and retirement" (p. 37). Professional development was not seen as being isolated from personal sociocultural-historical experiences (Kayes, 2002; Taylor, 1998; Yorks & Kasl, 2002). Sociocultural-historical influences were expected to impact a research participant's orientation, understandings, perceptions, and constructed meanings.

An accepted principle of reflection for professional development was that the individual was the site where learning occurred. Not all researchers were found to be in agreement with this accepted principle. For example Kozlowski et al. (2000) stated, "it is axiomatic that learning occurs at the individual level" (p.

163). However, Simon (1991) supported the position of the individual being the site of learning with the statement that "all knowledge is initiated (created or acquired) at the individual level" (in Bierly & Daly, 2002, p. 282). The philosophical underpinning of this research was a belief that the individual was the site for learning and that the opinion of every learner in this inquiry was of value.

Overall, the orientation of the inquiry included a cognitive-constructivist theoretical foundation. This foundation provided for the use of reflection (used as professional development) to examine the utility of the CIM as a potential influence on pedagogy.

3.3 The Research Questions

The chronological development of the research problem and the research questions was outlined in Chapter 1. In review, the research problem was defined as: *In what way(s) and to what extent can University instructors incorporate theories of change in their pedagogical practices through the application of a conceptual framework?* The Research Questions were:

Research Question 1: *What are the features of a theoretical framework for adapting pedagogy for contemporary postindustrial change that surface from analyses of authoritative literature and research?*

Research Question 2: *What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?*

Research Question 2(a): *What meanings and interpretations do the research participants give to the Change Infusion Model concepts?*

Research Question 2(b): *How do the research participants conceptualize their pedagogy at the various stages of the trials?*

Research Question 2(c): *What are the reported impacts of the Change Infusion Model on the pedagogical approaches of the research participants?*

Research Question 3: *What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?*

3.4   Data Collection Strategies

Data collection strategies were established for both the international conference and the research trials. The data collection strategy used at the international conference was a survey method that was created by the researcher (with the approval of the Research Committee) and designed to obtain feedback on the concept of the preliminary CIM. Data collection strategies in the research trials consisted of two elements, a guided record and a collaborative discourse method. The data collection strategies are outlined below.

3.4.1   Data Collection Strategy – Survey at an International Conference

An application was made to present the preliminary design of the CIM at the Tenth International Literacy and Education Research Network Conference on Thursday, July 17, 2003 in London, England. An abstract on the CIM was submitted to the conference selection committee. Feedback was sought from colleagues attending the conference as the CIM was new, and a general response of educators was required in order to move the research forward. The survey was designed to obtain feedback on the value of the CIM concept from the educational community prior to moving on to work on the research trials.

The preliminary model design was described in a thirty-minute presentation. At the end of the conference presentation, questions from the floor were answered, and a survey was distributed to conference participants.

The survey was developed by the researcher and approved by the doctoral Research Committee. The survey consisted of a series of questions. The questions were designed to elicit responses related to the conference participants' current understandings and use of pedagogical tools. The questions were designed utilizing a constructivist approach. These questions asked the conference participants to explain how they had formulated, or constructed their views on the CIM. These questions also prodded conference participants to reflect on both the model itself and its potential use as a pedagogical too.

The questions utilized by the researcher are listed below:

1A. Do you currently infuse/integrate the condition of change into your pedagogy, learning strategies, and/or instruction?

1B. Do you currently use a structured system or model to assist the infusion or integration of the condition of change into the pedagogy, learning strategies, and/or instruction?

1C. Did you create your own system or model to infuse or integrate the condition of change into your pedagogy, learning strategies, and/or instruction?

1D. What change theories and forces are you currently infusing into the pedagogy, learning strategies, and/or instruction?

1E. Overall, do you see a need for the development of a change infusion model as a tool for instructors to infuse the condition of change into their pedagogy, learning strategies, and/or instruction?

2. Do you agree that the majority of instructors in your institution currently infuse the conditions of change into their pedagogy, learning strategies, and/or instruction?

3. Do you agree that it is very important to infuse the condition of change into the majority of instructors' pedagogy, learning strategies, and/or instruction?

4. Is a separate course on change/change management taught

in your educational program?

5. Would you be personally interested in the change infusion model presented at this conference to integrate the condition of change into your pedagogy and/or learning strategies?

6. Please provide feedback on the steps in the change infusion model presented in this session.

7. Do you agree that there is a need for an educational web site to assist instructors to infuse the conditions of change into their pedagogy, learning strategies.

8. Other comments of your choice.

The conference data collection process included (a) the distribution of the survey at the end of the conference presentation, (b) the verbal explanation of the survey requirements by the researcher, (c) the request for the surveys to be returned to the researcher, and (d) the collection of the surveys at the conference or their return by mail.

When the feedback from the conference had been received, it was examined carefully and incorporated into the progress of the research. Based on the feedback, research on the CIM was seen as valuable and the research trials commenced.

3.4.2   Data Collection Strategies for the Research Trials

Immediately after the conference survey analysis was completed (findings in Section 4.2), with the approval of the Research Committee, research trials were conducted in three separate stages. These research trials were each one full semester in duration.

During each research stage, research participants were provided with an information session, which consisted of written statements concerning the CIM, and a verbal review of the information. During each information session, research participants were provided with a participant information package of

written material on the CIM. The researcher conducted a verbal review of the contents of the participant information package for the research participants. This information session (approximately one hour in length) reviewed: (a) the research participant requirements, (b) the participant agreement, (c) the content in the information package on the CIM, (d) the guided record method, and in stage 2 and 3, the collaborative meeting method, and (e) the researcher's contact information.

At the end of the information session held for each trial, the research participants agreed to complete the CIM research requirements and signed a document of agreement.

During each trial stage, research participants engaged with the CIM and the data collection from the participation was guided by Research Question 2: *What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?* The research participants (a) engaged with the CIM steps (see Appendix A: The Data Collection Chart), and (b) provided comments and opinions on the CIM concept, process, and arising issues. The participant comments and opinions were obtained in a written submission called a guided record. In addition, the collaborative meeting discourse text was collected as data during the stage 2 and 3 trials. The guided record and collaborative meeting data collection strategies and analysis methods were outlined below.

Between research trial stage 1 and research trial 2, two academic semesters were used to analyze the stage one data, refine the model based on the analysis (with approval from the Research Committee) and advance the participant information package on the CIM prior to the stage 2 trials. Between research trial stage 2 and research trial 3, three academic semesters were used to analyze the stage 2 data, refine the model based on the analysis (with approval from the Research Committee), and advance the participant information package on the

CIM prior to the stage 3 trials. Between the research trial stage 3 and the presentation of this document, more than two academic semesters were utilized to analyze the stage 3 data and refine the model and information on the CIM for presentation in this document.

There was a sequential and evolutionary developmental relationship between the three stages of trials. The stages were not independent, but were built upon the foundation of understandings developed in the previous stage. The final stage 3 trials were the most comprehensive and sophisticated as they were built upon learning developed during the first two stages.

3.4.2.1 Research Trials Data Collection Strategies—The Guided Record Method

The guided record method gave the opportunity for research participants to provide a written response to questions on the CIM and its use. The guided records were submitted by the research participants to the researcher at the end of the semester and detailed their engagement with the CIM. The guided record written submissions were accepted by fax, email, telephone (if followed up in written format), or hard copy.

The guided record reflective statements were framed with the four dimensions of reflection outlined by LaBoskey (cited in Bain, Ballantyne, Packer, & Mills, 1997, p. 4), and were (a) the purpose, (b) the context, (c) the procedures, and (d) the content. After approval from the dissertation research committee, the following reflective statements were used in stages 1 and 2 of the research trials:

1. Reflect on the change infusion model overall. Reflect on the individual components within the change infusion model.

2. Reflect on the material provided to support the change infusion model (the unit overviews, instructor background notes, and scenarios) and determine what was most and least useful, what was missing, and what must be expanded.

3. Discuss the initial opinions and understandings of the change

infusion model content with the goals, objectives, and content of your higher education course.

4. Provide suggestions for materials that might be useful in guiding or assisting the instructor to develop the change infusion model.

5. Provide reflective suggestions for change or adaptations to improve the change infusion model for use.

6. Provide a satisfaction or dissatisfaction level with the change infusion model on a Likert scale of 1–5 with the following ratings:
    1 = *strongly dissatisfied*
    2 = *dissatisfied*
    3 = *undecided*
    4 = *satisfied*
    5 = *strongly satisfied*

7. Provide any additional comments, issues, or suggestions concerning the training session and the use of the infusion model.

8. Open comment component–instructors to provide comments on the infusion model within any topic area not listed above.

Once the stage 1 and 2 trials were completed, the reflective statements were refined for the stage 3 research trials in consultation with the dissertation Research Committee. The adaptations were made in an attempt to provide greater clarity within the participant response. The stage 3 trials refined reflective statements included the following:

1. Please comment on the overall change infusion model concept.

2. Please comment on the collaborative meetings held to discuss the change infusion model.

3. Please comment on the individual components within the change infusion model.

4. Please comment on the material provided to support the change infusion model (the unit overviews, instructor background notes, & examples) and determine what was most and least useful, what was missing, and what must be expanded.

5. Discuss the ease and ability to using the change infusion model.

6. Discuss the change infusion model content with the goals, objectives, and content of your higher education course.

7. Do you have any suggestions for materials that may be useful in guiding or assisting the instructor utilizing the change infusion model?

8. Provide reflective suggestions for change or adaptations to improve the change infusion model and its use.

9. Provide a satisfaction or dissatisfaction level with the change infusion model on a Likert scale of 1–5 with:
    1 - *strongly dissatisfied;*
    2 - *dissatisfied;*
    3 - *undecided;*
    4 - *satisfied*; and
    5 - *strongly satisfied.*

10. Please provide a level indicating your ability to use the change infusion model in practice on a Likert scale of 1 – 5 with:
    1 - *strongly dissatisfied*;
    2 – *dissatisfied;*
    3 - *undecided;*
    4 - *satisfied;* and
    5 - *strongly satisfied.*

11. Provide comments on (a) the information session and (b) the use of the change infusion model.

12. Please feel free to comment on any aspect of this process, as you have experienced it, that has not been addressed by these questions.

The Likert Method of Summated Rating (Best & Kahn, 1986) was utilized in some questions within the guided record in order to obtain a scaled response on the satisfaction or dissatisfaction level with the model and participant's ability to use the model in practice. The Likert Method of Summated Rating was used in question 6 in stage 1 and 2 and questions 9 and 10 in the stage 3 trials.

3.4.2.2 Research Trials Data Collection Strategies—The Collaborative Discourse Method

The stage 1 research participants met with the researcher individually over the course of the academic semester. After the stage 1 trials, a determination was made by the researcher and the Research Committee that additional methods were required in order for research participants to understand and utilize the CIM. A collaborative meeting method was then introduced in stages 2 and 3 of the research trials.

The collaborative discourse method consisted of the researcher engaging with the research participants about the CIM. The meetings provided the researcher and research participants the opportunity to discuss the CIM and its use over the time period of one academic semester. The researcher asked probing questions that were used to help research participants formulate their responses and the interaction was guided by the collaborative meeting questions outlined in Appendix A: The Data Collection Chart.

The Data Collection Chart that guided the collaborative meeting discourse was developed by the researcher and was approved by the dissertation Research Committee. The chart provided the discussion topic areas and the design methodology for collecting data.

The Data Collection Chart provided a structured process for engaging with the CIM but was open to collaborative discourse parameters that were not concretely established. This allowed the structure to be open to free-flowing discussion shifts. In keeping with traditional qualitative research methods, these discussions were not expected to be conclusive (Klein & Truex, 1996; Truex, 1993).

The collaborative meeting method included what Fishbaugh (1997) called a teaming model that allowed members to participate on an equal basis. The

collaborative meeting method utilized verbal communication as the process for an exchange of meaning (Schreiber & Moring, 2001). The meaning was on the CIM and its use for practice. In addition the collaboration offered the opportunity to discuss the key characteristics in theories of change, to foster CIM competencies by sharing, and to expand the potential for learning through discussion on multiple perspectives and options (Hargreaves, 1994; McCall & Restow, 2001; Sirotnik & Goodlad, 1998; Swartz, 1998).

During the stage 2 research trials, the collaborative meetings included the combination of the researcher with the research participants in a face-to-face manner, with the exception of one participant that joined in the collaborative discussions by teleconferencing. During stage 3 of the research trials, all collaborative meetings were held with the researcher and research participants in a face-to-face manner.

The responses of each of the research participants were tape recorded and transcribed into text. The text was analyzed using a qualitative constructivist method of reviewing and uncovering common elements and themes within the data. The use of text in this inquiry followed the opinion of Glesne (1999) that an understanding of a particular phenomenon (in this case the CIM) expanded with the use of documents. The collaborative text conveyed a shared interaction on the CIM and its use and was deemed the expression of meaning by the research participants (Truex, 1993). The use of a collaborative text required "the placement of value on self-reports and critical narrative" (Nicholls, 2001, p. 62). The participant-created text detailed the reflections that the research participants developed for the purpose of professional development.

3.5 Data Analysis Strategies

According to Patton (2002),

> "guidelines for analyzing qualitative data can be found in
> abundance…but guidelines, procedural suggestions, and exemplars are

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not rules. Applying guidelines requires judgments and creativity. Because each qualitative study is unique, the analytical approach used will be unique" (p. 433).

Patton (1990) promoted that "the analytical process is meant to organize and elucidate telling the story of the data" (p. 392). In this inquiry, data analysis strategies were established for (a) the survey data obtained at the international conference and (b) the research trials data obtained from the stage 1, 2, and 3 guided record method and the stage 2 and 3 collaborative discourse method.

3.5.1   Data Analysis Strategies for the Conference Survey

The data generated at the international conference was based on two forms of reflection referred to by Mezirow (in Nicholls, 2001) as premise reflection (p. 65) and process reflection (p. 64). In this inquiry, premise reflection included reflection on the current environmental conditions and reasoning that supported the model (prompted by conference survey questions: 1A, 1B, 1C, 1D, 1E, 2, 3, and 4). Process reflection included reflections on the interest in the CIM and actions required by the model (prompted by conference survey questions: 5, 6, 7, and 8). Overall, the conference data was examined to expose how conference participants constructed their reality (Patton, 2002) around their experiences with the CIM.

3.5.2   Data Analysis Strategies for the Research Trials

Research participants' reflections created the guided record data and collaborative discourse data. The data analysis strategies included the following:

3.5.2.1   Data Analysis Strategy for the Guided Record Method

The research participants reflected on the CIM and its use and recorded their opinions in the guided record. The researcher analyzed the guided records with the objective of discovering meaning (Klein & Truex, 1996; Truex, 1993) on the research participants' understanding and opinions concerning the use of the

CIM. The analysis utilized the reflection types provided by Mexirow (cited in Nicholls, 2001) and included content reflection (p. 63), process reflection (p. 64), and premise reflection (p. 65). The analysis was based on the constructivist view of an interpretation that was centred on the reader (Habermas, 1979; Roseneau, 1992).

Tables were developed for each stage of the research that outlined the research participants' understanding and opinion on the CIM and its use. Research participant quotes were presented within each table to support the meaning of the data as discovered by the researcher. The quotes "represent[ed] people in their own terms [in order to] capture research participants' view of their experiences in their own words" (Patton, 2002, p. 331).

3.5.2.2 Data Analysis Strategy for the Collaborative Discourse Method

An examination of the collaborative meeting text was completed to discover the research participants' understanding and opinions of the CIM and its use. The analysis of the collaborative meeting text followed discourse analysis whereby meaning was discovered (Klein & Truex, 1996; Truex, 1993).

In this inquiry, the organization of the analysis was aided by "sensitizing concepts" (Patton, p. 391). This included the use of pre-established concepts for analysis that provided "a general sense of reference and… directions along which to look" (Blumer, 1969, p. 148, cited in Patton, p. 391). Patton stated that "sensitizing concepts" included the use of "evaluation questions identified at the beginning of the study" (p. 405).

The "evaluation questions" were used to guide the meaning of the discourse to evolve. The questions were initially prepared by the researcher and subsequently modified by the dissertation Research Committee. The Research Committee approved a total of 5 "evaluation questions," or discourse analysis questions for this inquiry. Each discourse analysis question was used to guide

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one complete reading of the collaborative discourse data resulting in five separate readings of the data. The approved questions for the collaborative meeting text discourse analysis were as follows:

> ***Discourse Analysis Question #1:*** In what ways are the research participants making use of the change infusion model implementation package, and the collaborative meetings?

> ***Discourse Analysis Question #2:*** How is the CIM process being interpreted and implemented by the research participants and what are the arising issues?

> ***Discourse Analysis Question #3:*** In what ways are the research participants interpreting the "change" concepts that underpin the change infusion model?

> ***Discourse Analysis Question #4:*** How are the pedagogical practices of the research participants impacted by their engagement with the change infusion model? Specifically, did the change infusion model guide the research participants to consider infusing key characteristics from theories of change into one's pedagogy?

> ***Discourse Analysis Question #5:*** What insights emerge from the research methods about processes of personal change as an aspect of University academic work lives?

During the analysis of the collaborative text, the revelation of an idea or position was deemed important; the frequency of an arising idea or position was not the determinant of importance (Berleson, 1954 in Carney, 2001).

A series of tables were developed, one for each of the five collaborative discourse analysis questions listed above. Each table outlined the meaning as discovered by the researcher concerning the research participants' understanding and opinion on the CIM and its use. Participant quotes were presented in tables to "represent people in their own terms [to] capture participants' view of their experiences in their own words" (Patton, 2002, p. 331).

3.6 Research Sample

Ten conference participants attended an international conference presentation on the preliminary CIM and each was provided with a survey on the model.

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Seven surveys were completed and returned to the researcher. The respondents were instructors at the higher education level from the United Kingdom, Australia, South Asia, and the United States of America. This constituted a "purposeful sample" as described by Patton 2002 (p. 242).

Research participants in the three-stages of research trials were instructors at the higher education level. The research participants were from a variety of academic departments and were teaching a course during the academic semester in which they engaged with the CIM. A separate group of research participants were utilized in each of the three stages of trials. Each stage of trials began with six or more research participants; however, each stage had three research participants complete all of the components required for the trials. The trial research participants were referred to by a code name. For example Stage 1, participant number 1 was referred to as S1-1, Stage 1, participant number 2 was referred to as S1-2, and Stage 1, participant number 3 was referred to as S1-3. The data from the research participants that completed all elements of the trials was utilized in this inquiry.

3.7   Ethics Clearance

Ethics clearance for the research was obtained from the University of Southern Queensland's Human Research Ethics Committee. Reference number H03STU257 was assigned to this approval.

3.8   The Criteria of Accuracy

The criteria of accuracy in this inquiry followed the work of Rubin and Rubin (1995) and Denzin and Lincoln (1998). Rubin and Rubin indicated that credibility should be judged by the transparency, consistency, and communicability of the research. Denzin and Lincoln indicated reliability involved the ability to replicate a research study. In addition, Denzin and Lincoln suggested objectivity in a research study was founded in unbiased

research findings. This inquiry established protocol for credibility, reliability, and objectivity.

To meet the criteria of credibility, this inquiry used two components that aided transparency, consistency, and communicability. The components were triangulation and a declaration of bias.

The triangulation in this inquiry followed what Patton (2002) described as "analysis triangulation" (p. 556). The triangulation involved:

1. The primary research participants' guided records were placed within this document (provided in Appendix B),

2. The researcher's analysis of the primary guided records and,

3. The themes expressed in the analysis followed the conclusions in the authoritative literature.

The triangulation was a strategy used to reduce "systematic bias and distortion during data analysis" (Patton, 2002, p. 563). The triangulation aimed to increase the credibility of the CIM research analysis by allowing findings to be checked "against other …perspectives" (Patton, p. 563). The validity of the data analysis was based on the constructivist view of an interpretation that was centred on the reader (Habermas, 1979; Roseneau, 1992). Concluding statements made by the researcher were open to comparison from conclusions made by additional readers. According to Patton, based on the constructivist perspective, discovered meaning potentially differed between readers.

A declaration of bias was utilized in this inquiry and followed the premise that objectivity in its total state was "impossible for researchers" (Mellon, 1990, p. 26). Creswell (1994) promoted that biases could be neutralized with the use of a combination of methods. This researcher selected a declaration of bias in combination with the triangulation step as the neutralization method.

The inclusion of a declaration of bias in this inquiry followed Mellon's (1990) suggestion that "researchers [should] systematically acknowledge and

document their biases" (p. 26). Following Mellon's suggestion, the CIM research declaration of bias included that the researcher developed the CIM, established the guided record method questions, developed the participant information package, transcribed the text, and knew two of the nine trial research participants (fellow faculty members). This statement of bias revealed that the CIM researcher completed the data collection and analysis concerning the participant perspectives on the use of the CIM model. This situation was revealed as acceptable as Patton (2002) outlined that, "in qualitative inquiry, the researcher is the instrument" (p. 14).

The reliability factor in this inquiry involved the ability to replicate the study (Denzin & Lincoln, 1998). To meet this factor, the orientations that underpinned the research, the context, and the methods were described in detail. In addition, the study included repeated stages of trials conducted with different research participants.

The objectivity of research findings in this inquiry was judged as credible due to (a) the prolonged period of time for research engagement for the three stages of trials, (b) observations that were persistent, and (c) the triangulation (Lincoln & Guba, 1985).

Patton's (2002) suggestion was followed whereby it was up to the researchers to construct their knowledge with a conscious effort to manage potential biases. According to Patton (2002), despite efforts, "neutrality and impartiality are not easy stances to achieve" (p. 562). The researcher brought her interpretations to the research. Patton suggested that constructivists deal with neutrality and impartiality "through conscious and committed reflexivity--entering the hermeneutical circle of interpretation and therein reflecting on and analyzing how their perspective interacts with the perspectives they encounter" (p. 570). This researcher followed Patton's suggested and continuously and consciously attempted to neutralize bias by conducting all research activities with the goal

of ensuring that the practices were supported and the evidence was presented within the records of data.

3.9 Summary

This chapter described the research methods utilized in this inquiry and included the orientation, research questions, data collection strategies, data analysis strategies, ethics clearance, and the criteria for accuracy.

Overall, the research orientation in this inquiry included a cognitive-constructivist method. Research questions approved by the Research Committee were designed to guide the inquiry. In addition, questions were developed as a constructivist method that aided research participants to reveal the perceptions on the CIM. The questions were used in the survey of conference participants and in the research trials to encourage the research participants to reflect on the CIM. Reflection was offered as an opportunity for professional development in the area of pedagogy for the research participants.

A framework that reflected the theoretical foundations was established for the data collection strategies and data analysis strategies. The data collection strategies were established for both the international conference and the research trials. A survey method was utilized for obtaining feedback on the model from the conference participants. A guided record method of written opinion was utilized in the three stages of trials. In addition, a collaborative meeting method was utilized in the stage 2 and 3 trials. The data analysis strategies looked at the research participants' "constructed reality" (Patton, 2002, p. 132) and the data was analyzed with the aim of discovering meaning (Klein & Trues, 1996; Truex, 1993). The analysis utilized a framework that included the forms of reflection provided by Mezirow (in Nicholls, 2001). The organization of the collaborative discourse analysis was aided by "sensitizing concepts" (Patton, 2002, p. 391) that included evaluation questions used to guide the construction of the meaning of that data.

The University of Southern Queensland's Human Research Ethics Committee provided ethics clearance for this inquiry.

The criteria for accuracy followed the work of Rubin and Rubin (1995) and Denzin and Lincoln (1998) and a declaration of bias and statement of triangulation was provided. In addition, Patton's (2002) suggestion that the researcher put forward a conscious effort to manage potential biases was followed.

The research findings were presented in Chapter 4.

CHAPTER 4: FINDINGS

4.1 Introduction

In this chapter, the inquiry findings are presented on the survey from the international conference and the findings from the research trials. The research trial findings are presented in three sections: (a) the stage 1 guided record findings, (b) the stage 2 guided record and collaborative discourse findings, and (c) the stage 3 guided record and collaborative discourse findings. A foundation of understanding and conclusions are drawn from all three stages of trials. However, the stage 3 trials are the most substantial and comprehensive benefiting from an on-going process that refines the research tools as the stages progress.

Findings are presented in order per the Research Problem and the Research Questions that are restated below:

> **The Research Problem:** *In what way(s) and to what extent can University instructors incorporate theories of change in their pedagogical practices through the application of a conceptual framework?*

> **Research Question 1:** *What are the features of a theoretical framework for adapting pedagogy to postindustrial change that surface from analyses of authoritative literature and research?*

> **Research Question 2:** *What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?*

> **Research Question 2(a):** *What meanings and interpretations do the research participants give to the Change Infusion Model concepts?*

Research Question 2(b): *How do the research participants conceptualize their pedagogy at different stages of the trials?*

Research Question 2(c): *What are the reported impacts of the Change Infusion Model on the pedagogical approaches of the research participants?*

Research Question 3: *What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?*

The answer to Research Question 1 is presented in Chapter 2. This answer provides the theoretical framework for adapting pedagogy for postindustrial change that surfaces from the literature review. In an effort to reduce redundancy, the answer is not repeated in this chapter.

4.2   Findings--A Conference Survey

The preliminary CIM was presented at the Tenth International Literacy and Education Research Network Conference on Thursday, July 17, 2003 in London, England. Surveys on the model were distributed to each of the ten attendees. Seven surveys were completed and returned to the researcher. Six surveys were returned immediately after the conference presentation, and one survey was returned by mail.

The results of the survey provided the initial primary response of practitioners to Research Question 2: *What is the efficacy of a CIM in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?*

The conference survey responses indicated that six of the seven respondents agreed it was important to instil the condition of change within pedagogy,

learning strategies, and/or instruction. Four of the seven respondents felt that they currently infused/integrated the condition of change into pedagogy, learning strategies, and/or instruction. However, none of the respondents indicated that they used a structured system or model to assist in the process of instilling change within pedagogy. Three respondents stated that they created their own methods to incorporate change. Five of the seven respondents stated that there was a need for the development of a model as a tool for instructors to infuse the condition of change into pedagogy, learning strategies, and/or instruction. One survey respondent was not supportive of the CIM. This respondent reasoned that the model was not necessary for students and that effective instruction could address the issue of postindustrial change.

Overall, five of the seven survey respondents indicated a personal interest in the Change Infusion Model presented at the conference. The conference survey findings were outlined in Table 4.2.1 below and a summary of the conference survey findings followed the table.

Table 4.2.1
An overview of survey responses from conference participants at the Change Infusion Model presentation at the Tenth International Literacy and Education Research Network Conference on Thursday, July 17, 2003 in London, England.

Question	Number of responses	Number responding "Yes"	Number responding "No"	Comments
1A. Do you currently infuse/integrate the condition of change into your pedagogy, learning strategies, and/or instruction?	7	4	3	
1B. Do you currently use a structured system or model to assist the infusion or integration of the condition of change into the pedagogy, learning strategies, and/or instruction?	5	0	5	

Question	Number of responses	Number responding "Yes"	Number responding "No"	Comments
1C. Do you currently infuse/integrate the condition of change into your pedagogy, learning strategies, and/or instructions?	7	4	3	
1D. What change theories and forces are you currently infusing into the pedagogy, learning strategies, and/or instruction?	2			i- my courses are dependent on change themes but more on change strategies ii - the content of our models change infrequently--the background, environment and content of our teaching changes considerably. To cater to this we develop case-based business resources for our students that reflect the environment in which organizations operate
1E. Overall, do you see a need for the development of a CIM as a tool for instructors to infuse the condition of change into their pedagogy, learning strategies, and/or instruction?	6	5	1	
2. Do you agree/disagree that the majority of instructors in your institution currently infuse the conditions of change into their pedagogy, learning strategies, and/or instruction?	6	3	3	
3. Do you agree/disagree that it is very important to infuse the condition of change into pedagogy?	7	6	1	

Question	Number of responses	Number responding "Yes"	Number responding "No"	Comments
4. Is a separate course on change/change management taught in your educational program?	7	1	6	
5. Would you be personally interested in the CIM presented at this conference to infuse the condition of change into your pedagogy and/or learning strategies?	5	5	0	
6. Please provide feedback on the steps in the change infusion model presented in this session.	3			i- all are very convincing ii- the model would be useful if presented or part of a collaborate-based teaching of learning programs as well as in service development iii- need more information
7. Do you agree that there is a need for an educational web site to assist instructors to infuse the conditions of change into their pedagogy, learning strategies, and/or instruction?	7	6	1	
8. Other comments of your choice.	1			- it appears as though you have chosen to implement a new theoretical model that is not necessary for students and can easily be addressed with the use of effective instruction in the classroom

Summary of Table 4.2.1: An overview of survey responses from conference participants at the Change Infusion Model presentation at the Tenth International Literacy and Education Research Network Conference on Thursday, July 17, 2003 in London, England.
- 4 of 7 conference participant responses indicated that they currently infused the condition of change into pedagogy
- none of the conference participants indicated that they use a structured system or model to assist the infusion
- 6 respondents agreed that it is very important to infuse change into pedagogy
- 5 respondents agreed that they would be interested in the CIM presented at the conference to infuse change into pedagogy
- 1 participant indicated that the model was "not necessary for students and can easily be addressed with the use of effective instruction in the classroom."
- 4 conference participants indicated that they currently infuse change into pedagogy/learning strategies, and/or instruction
- 3 respondents stated they created their own methods to integrate change into pedagogy, learning, and/or instruction.
- 5 respondents stated there was a need for a model as a tool to infuse change.

4.3 Summary of the Conference Survey Findings

The presentation of the preliminary Change Infusion Model made on July 17, 2003 at the Tenth International Literacy and Education Network Conference yielded responses from conference participants that suggested two key elements. The first element came from the conference participants premise reflection on the current conditions and reasoning for a model. The conference participants indicated the current environmental conditions included that some instructors were integrating change into pedagogy, learning, and/or instruction but were left to create a method individually. The second element related to the conference participants' process reflection or actions required. The majority of the respondents indicated a personal interest in the development and use of a tool such as the CIM to guide instructors to infuse change. Not all of the conference participants were supportive of the CIM, as one respondent did not see a need for the model. However, the majority of the responses to the model encouraged the researcher to continue the work on the CIM.

4.4 Findings--The Research Trials

The stage 1 research trials were conducted with a sample of three research participants that were instructors at the higher education level that completed a guided record method described in Chapter 3

4.5 Stage 1 Trials Guided Record Findings

The stage 1 guided records provided a satisfaction or dissatisfaction with the CIM on a Likert scale of opinion providing a response to Research Question 2: *What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?*

The analysis of all of the stage 1 reflective statements by the stage 1 research participants indicated that all were satisfied with the premise of the model and rated the CIM outlined in the participant information package a 4 out of a possible 5 on the Likert scale. Descriptors were presented in the stage 1 trial guided records that supported the *satisfied* rating given to the CIM. For example, S1-2 described the CIM as "an excellent model that should be endorsed by the educational system around Canada" and S1-3 described the CIM as "useful," "overall valuable," and "a wonderful process and topic."

However, the data revealed that the research participants did not understand the CIM as a strategy to frame instructional and learning strategies with characteristics of change to create a context of contemporary change in which to work. The research participants understood the model as a strategy to teach content about theories of change. The lack of understanding was illustrated when S1-1 stated they showed the Apollo 13 movie to students to illustrate the impact of change and used quotes to stimulate discussions about change. These actions suggested an emphasis on content for teaching about change. Also, S1-3 stated that the model was complex for the students. Yet, the focus of the model was on the instructors and adapting their pedagogy and not on the students.

The stage 1 participant findings illustrated that the CIM did not enable instructors to move beyond Step 3 where one developed an understanding of theories of change, including the key characteristics within the theory. The stage 1 research participants did not advance to Steps 4 and 5 to rethink

pedagogy for the use of theories of change and to explore the implications of adapting pedagogy for postindustrial times. Therefore, the efficacy of the CIM did not enable the research participants to adapt pedagogy by infusing characteristics from theories of change within their instructional and learning strategies to create a context of contemporary change.

The stage 1 trial research participants' findings also provided a response to Research Questions 3: *What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?*

The preliminary CIM and the participant information package that outlined the model were utilized in the stage 1 trials. The stage 1 trial data was analyzed for participant opinions on refining or improving the model and the package. No suggestions were found for refining or adapting the steps in the model. Five suggested refinements were offered for the participant information package.

The stage 1 research participants supported the participant information package for use. S1-1 indicated that the participant information package was useful for "an easy reference." S1-2 stated they were "satisfied with the way it was set up" and that the document was "user friendly" and "well researched." S1-3 offered the opinion that the material in the package was "complete." The research participants were generally satisfied with the participant information package.

However, the research participants offered five suggested refinements for the participant information package. The refinements included (a) that additional information be added in the explanation on step 2, the flexibility effect (S1-1), (b) that the topic of dissipative structures be incorporated within the explanation of complexity theory in step 3 (S1-1), (c) that a summary of the model was needed, (S1-3), (d) graphics were needed for each of the steps in the model to aid research participants to remember the five steps (S1-3), and (e) a written

context for the model was required in the participant information package. Each of the suggestions was considered by the researcher and recommendations for refining the participant information package were presented to the Research Committee.

The stage 1 findings were compiled and presented in the Tables below and a summary of the findings was presented immediately after the tables, along with the refinements approved by the Research Committee.

Table 4.5.1.1

Stage 1 Research Trials--Guided Record Responses on Research Question 2: What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?

Research participant	Findings	Supporting quotes
S1-1	- participant was satisfied with the model as presented	Satisfaction rating: 4-*satisfied,* "only because of the lack of information on the flexibility effect – if more information was available for the instructor on this topic I would have given it a 5" (*very satisfied*)
	--	--------------------------------------
	- participant indicated that the model efficacy was as a teaching strategy and not a pedagogical strategy	- "obtained very interesting *(classroom)* discussion and something that probably would not have developed had I not been utilizing the infusion model"
		- "I would like to thank you for introducing this strategy to me, and while I was a little bit sceptical early on, as I got further into my course, and became more creative in my personal infusion method, I really began to enjoy taking the time … to discuss the impact of change"
		- used a change "quote of the day to begin" classes
		– utilized the quote from Apollo 12 Astronaut Jim Lovell (1970) "Houston, we have a problem" and then a clip from the movie.

Research participant	Findings	Supporting quotes
S1-2	- participant was satisfied with the model as presented	(Satisfaction or dissatisfaction level with the model): 4--*satisfied* - "it is an excellent model that should be endorsed by the educational system around Canada. I appreciate the work and we need more of this type of work going around. Teachers and administrators could learn a lot from this model"
S1-3	- participant was satisfied with the model as presented and provided positive descriptors	(Satisfaction level with the model): 4-*satisfied* – - "useful…overall, valuable" - "a wonderful process & topic" - "teachers must think about what will happen in the future, they tend to be centred in the now and this was particularly valuable exercise"
	-- - participant suggested an addition of an overview page in the participant information package	-- "communication to a 1-page overview would raise the satisfaction level"
	-- - participant indicated that the model efficacy was as a teaching strategy and not a pedagogical strategy	-- - "a bit complex for the students I have…needs to be simplified with an overview page" - "I simplified the material with an overview page and posed a simple question: What do you think the nature of teaching reading will be like in the next 10 years or so? Some students did not have background on the theories. Some of the information was not in the student's current range of knowledge" - "the students like the topic" - "there were no problems getting discussions going" - "some discussions continued outside of class (& students reported this to me)"

Summary of Table 4.5.1.1: Stage 1 Research Trials--Guided Record Responses on Research Question 2: What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?
- all research participants indicated that they were satisfied (4 out of a Likert Scale of 5) with the model
  as presented
- descriptors of the model provided by research participants included "an excellent model that should be
  endorsed by the educational system around Canada" (S1-2), and "useful," "overall
  valuable," and "a wonderful process and topic" (S1-3)
- the research participants illustrated the efficacy of the model as a teaching strategy and not a
  a pedagogical strategy.

Table 4.5.1.2

Stage 1 Research Trials--Guided Record Responses on Research Question 3: What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?

Research participant	Findings	Supporting quotes
S1-1	- participant felt the participant information package provided on the CIM was straightforward & useful	- "I like how the package is broken down–providing an easy reference to refer to" - "overall, I thought the change infusion model is very straightforward and easy to use, and provides a practical way of examining the topic"
	- participant suggested material be added to the participant information package on the CIM that included more information in step 2 on the flexibility effect and the addition of dissipative structures in the explanation of complexity theory offered in step 3	- "include more information on the flexibility effect, as this area seems to be a little bit weaker than others in terms of providing practical means for being flexible in the change-based environment" - "add the theory of dissipative structures"
S1-2	- participant felt the model was user friendly and the participant information package supported the model well	- "At this point I'd say that I was quite satisfied with the way it was set up" - "I think it was user friendly" - "your research and literature review work found what was necessary to support the model"
	- participant suggested that the participant information package needed to include the context	- "I think what is needed is to create a context for the instructor that takes the instructor from their current reality and connects them to this model"

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Research participant	Findings	Supporting quotes
S1-3	- participant indicated the participant information package explaining the model was generally good --- - participant suggested summaries and graphics be added to the participant information package outlining the model	- "thorough, complete, and interesting" - "well researched" --------------------------------------- - "needs some summaries to make it a lighter weight" - "make it simple to communicate - consider using 5 graphics and 5 summary points" - "some graphics would help, and keep exploring some different materials, develop in the future different material for different disciplines"
Summary of Table 4.5.1.2: Stage 1 Research Trials--Guided Record Responses on Research Question 3: What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research? -the lack of suggested refinements to the CIM framework revealed that the stage 1 research participants were satisfied with the current framework - the stage 1 research participants indicated that the CIM participant information package was useful as "an easy reference" (S1-1), that they were "satisfied with the way it was set up" and that the document was "user friendly (S1-2), that the package was "well researched" and "complete" (S1-3) - research participants offered suggestions for refining the document that included (a) increasing the information provided on the flexibility effect, (b) adding material on dissipative structures to the explanation of complexity theory (S1-1), (c) a summary, graphics for each step(S1-3), and (d) the addition of a written context (S2-1)		

4.5.1 Summary of the Stage 1 Guided Record Findings

Overall, the stage 1 research participants rated their opinion of the CIM on a Likert scale as *satisfied,* or 4 out of a possible level of 5. The model was described as "an excellent model that should be endorsed by the educational system around Canada" (S1-2), "useful," "overall valuable," and "a wonderful process and topic" (S1-3).

The lack of suggested refinements to the model revealed support for the preliminary CIM. However, changes were suggested for adapting the CIM participant information package. The adaptations suggested included the addition of (a) further information in the explanation of the step 2 flexibility effect concept, (b) the addition of dissipative structures to the explanation of

complexity theory in step 3, (c) a summary of the model, (d) graphics to represent each step in the model, and (e) a written context for the model.

After consultation with the dissertation Research Committee, all of the suggestions from the stage 1 research participants were incorporated within the participant information package.

The stage 1 participant guided records indicated an awareness and understanding of the model as a teaching strategy and not a pedagogical strategy. An additional strategy was needed to improve the efficacy of the model to guide research participants to pedagogically infuse key characteristics of change to create a context of change in the classroom.

After consultation with the Research Committee, it was determined that a collaborative discourse meeting method would be added. This method was intended to help research participants to understand the CIM as a pedagogical strategy. Hence, the collaborative meeting method was instituted for use with the model.

In addition, Research Questions 2(a), 2(b), and 2(c) were added to the inquiry with the approval of the dissertation Research Committee. These research questions were developed in an attempt to delve deeper into the response of the cohort to the CIM. Research Question 2(a) was added for application to the guided records. This question was: **Research Question 2(a):** *What meanings and interpretations do the research participants give to the Change Infusion Model concepts?*

Research Questions 2 (b) and 2(c) were added for application to the collaborative discourse method. These questions were:
Research Question 2(b): *How do the research participants conceptualize their pedagogy at different stages of the trials?*

Research Question 2(c): *What are the reported impacts of the Change Infusion Model on the pedagogical approaches of the research participants?*

4.6 Findings--Stage 2 Research Trials

The stage 2 research participants were provided with the participant information package that was refined based on the results of the stage 1 trials. The stage 2 trials were conducted and the data from the guided records was analyzed and generated findings. In addition, data from the collaborative discourse meeting method was analyzed and generated findings.

Reflection types offered by Mexirow (in Nicholls, 2001) were used to analyze the guided record data. Central questions (Patton, 2002) guided a series of readings used to analyze the collaborative discourse data. The data analysis followed a constructivist perspective in that it looked at the research participants' "constructed realities" (Patton, p. 132).

The stage 2 guided record findings were discussed and presented in tables organized based on the order of the Research Questions. A summary was presented after the tables. This was followed by the collaborative discourse findings.

4.6.1 Stage 2 Trials--Guided Record Findings

Stage 2 research participants provided a written submission of opinions and comments on the CIM in a guided record.

An analysis of all of the stage 2 trials guided records generated a response to Research Question 2(a): *What meanings and interpretations do the research participants give to the Change Infusion Model Concepts?* The participant responses indicated the CIM was generally valuable, although not for all research participants, the model required a significant time commitment, and one needed a comfort level for pedagogical change to utilize the model.

The participant response included descriptors that supported an interpretation of the CIM as valuable, viable, and appropriate for contemporary times. S2-3 stated that the model was a "necessary component" for educators and "representative of the change that society and culture is going through at this present time." S2-1 stated, "With less time constraint, this will be an excellent and implementable model." Research participants interpreted the CIM as providing "another alternative" (S2-3) and as "a way to engage in considering multiple change variables" (S2-1).

One participant did not support the model. S2-2 stated that the model was too complex. This participant indicated "the sheer complexity of each component makes it somewhat overwhelming to put them all together in a model."

The stage 2 research participants indicated that the model required a significant time commitment in order to learn to implement the model. The time provided during the trials for research participants to learn about the model was one academic semester. S2-2 indicated, "More time [was] needed to absorb and apply the concepts" and S2-1 stated that they were "still processing the effects of [the] time constraints." S2-1 found that "sometimes the variables being considered [*does*] not lend themselves to hyper-structure and/or strict timelines." The stage 2 findings indicated that the efficacy of the model was affected by the time commitment of the instructors learning the model.

One of the substantive issues reported by the research participants was that time was required to complete the planning and organizational requirements when pedagogy was adapted. Thus, adapting pedagogy increased one's instructional workload. To manage the workload issue, research participants suggested the model be used with a "phased-in." approach. This meant that some instructional and learning strategies be adapted first, followed by a progressively larger number of strategies to be adapted. This suggestion was

appropriate based on S2-1's interpretation that the model be embedded "in a piece of the course."

S2-1 also indicated that the model should not be utilized "at the last minute or midstream." This suggestion was made with an interpretation that the increased workload that occurred when one adapted pedagogy needed time to be managed.

A comfort level for changing pedagogy was required when implementing the CIM. S2-2 indicated that a comfort level was necessary due to an element of risk when rethinking pedagogy. A level of comfort was required for the risk of change. S2-2 indicated, "the more comfortable with risk, the greater the ability and ease of infusing; the more prepared and planned/organized the course is ahead of time, the more effective the infusing." The findings revealed an interpretation that the CIM was appropriate for use by instructors that were comfortable with change or risk.

The stage 2 research participants revealed their interpretation that the model was generally appropriate for use in contemporary times. However, there were issues when utilizing the model. The issues included the complexity of the model, the time needed to learn the model, and the required comfort level for risk if one adapted pedagogy. Due to the issues in adapting pedagogy, the CIM was generally seen as practical for use in a phased-in manner.

An analysis of all of the stage 2 trials guided records generated a response to Research Question 2: *What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?* The participant responses indicated an awareness of the CIM and general acceptance of the model as a valuable tool, although not for all research participants. However, some research participants revealed an orientation for using the model in the future.

However, the use of the model in future practice was not determined within this inquiry.

The aim of the CIM was to guide instructors to infuse characteristics of theories of change to create a context or an environment of change within the classroom that simulated real-world change occurring outside the classroom. The efficacy of the model to meet this aim was constructed based on the research participants' premise reflection (awareness, understanding, acceptance or orientation for the use of the CIM).

The research participants revealed an awareness and acceptance of the model generally as a valuable tool (S2-3). Research participants rated their level of satisfaction with the model on a Likert scale. One participant rated their level of satisfaction at 5- *very satisfied,* and one at 4-*satisfied,* and one at 3-*undecided.* The participant that was undecided (S2-3) indicated that it was difficult to determine the efficacy of the model because, "the sheer complexity of each component makes it *(the model)* somewhat overwhelming." However, the participant that was undecided concerning the model indicated the ability to complete, and ease of infusion with course goals and objectives, was "smooth" and "sharing pedagogic strategies with other risk takes in a supportive and open minded environment was a great experience."

The research participants' orientation to frame instructional and learning strategies in a context of contemporary change was not fully revealed. The model was described as excellent, useable, and a pedagogical strategy that offered "another alternative" (S2-3). However, the research participants learned the model during one academic semester. S2-1, indicated that "with less time constraint…[the CIM was] an excellent and implementable model." The time necessary to adapt a course outline, train the teaching assistants, and institute the model was seen as a stage of research to be conducted in the future. The

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Research Committee deemed the focus of the research to be the obtainment of feedback on the model and its potential use in practice.

Findings revealed that the efficacy of the model was affected by arising "tensions" (S2-1). The tensions included "points of resistance" and "stress" (S2-1) due to change. Meaning was constructed that indicated that understanding and managing the tensions would aid one to determine the amount of infusion one could complete.

An analysis of all of the stage 2 trials guided records generated a response to Research Question 3: *What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?* The research participants revealed suggestions for refining the model to a phased in method for implementation and offered three suggestions for refining the participant information package.

The preliminary CIM and the participant information package that was refined based on the stage 1 trial findings, were utilized in the stage 2 trials. The data was analyzed for participant opinions on refining or improving the model and the package.

The stage 2 research participants revealed a concern that the model could be used to adapt all of the instructional and learning strategies at once. The research participants indicated the manner in which the CIM should be utilized was to incrementally adapt pedagogy. S2-1 indicated a required "phased in implementation." Research participants determined that pedagogical adaptations constructed with the use of the CIM needed to be implemented in a phased in manner because "anyone using a model of this magnitude in teaching needs to plan [and] prepare" (S2-2) for change.

The discourse indicated that the model was not for "last minute or mid-stream" (S2-2) use. S2-2 suggested instructors required preparation time and this preparation time was needed when using the CIM to "avoid passing on risk to students in terms of their learning and grades."

The analysis of the guided records also provided data that concerned the participant information package that outlined the model. Responses revealed the participant information package was "excellently prepared and organized in a very logical and clear process" (S2-3), "helpful" (S2-1), and the material was "in-depth but not overly long" (S2-3).

The participant descriptors offered support for the participant information package; however, three suggestions were offered for refining the package. S2-3 indicated the need for a brief outline on the model such as a chart "to assist the instructors until they are familiar…about the material." In addition, this participant suggested expanding the scenario provided, as well as removing the word "the" in the descriptions provided. The word "the" was seen as stating that the term was complete and closed.

The guided record data from stage 2 research participants was presented below in Tables 4.6.1.1, 4.6.1.2, and 4.6.1.3 as they related to the Research Questions. This was followed by the collaborative discourse findings and then a summary of the stage 2 findings.

Table 4.6.1.1

Stage 2 Research Trials--Guided Record Responses on Research Question 2:
What is the efficacy of a Change Infusion Model in enabling a cohort of
professionals to frame their instructional and learning strategies in a context of
contemporary change?

Research participant	Findings	Supporting quotes
S2-1	- participant was satisfied with the model --- - the time constraints of learning the model in the period of one academic semester was an issue	(Satisfaction or dissatisfaction level with the model): 4-*satisfied* - "my ability and ease are high" --------------------------------------- - "still processing the effects of time constraints" - "the more aware the instructor is of her own points of resistance and what constitutes a stress, the more realistic she can be about how much to infuse & with whom (e.g., she becomes more aware of competing tensions" - "with less time constraint, this will be an excellent and implementable model"
S2-2	- participant was satisfied with the model; however found it hard to determine the effectiveness of the model--the model was too ambitious --- - participant indicated that they engaged with the model and developed an awareness of the model as a pedagogical strategy - employed the dispersed domain information in step 3 --- = participant indicated additional time was needed for the engagement with the model	(Satisfaction or dissatisfaction level with the model) 3–*undecided* - the ability and ease of infusing the change infusion model… with the goals and objectives and content of the higher education course was "smooth" - "the sheer complexity of each component makes it somewhat overwhelming to put them all together in a model. Each component is a model in and of itself" - Perhaps an overall 'unifying' model is a trifle ambitious both theoretically and practically" --------------------------------------- - I employed the theory of dispersed domain --------------------------------------- - "more time needed to absorb and apply the concepts"

	-- - participant enjoyed the collaborative environment for sharing pedagogic strategies	-------------------------------------- - "Sharing pedagogic strategies with other risk takers in a supportive and open minded environment was a great experience - "more time needed to absorb and apply the concepts" -
S2-3	- participant was strongly satisfied with the model	(Satisfaction or dissatisfaction level with the model): 5–*strongly satisfied.* - "I believe that the change infusion model is representative of the change that society and culture is going through at this present time. The change infusion model provides this basis for providing the instructor with a value theory, tool" - provided "another alternative"

Summary of Table 4.6.1.1: Stage 2 Research Trials--Guided Record Responses on Research Question 2: What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?
- 1 participant was strongly satisfied with the model (rated model a 5 out of a Likert scale of 5), 1 was satisfied with the model (rated model a 4 out of 5), and 1 participant was undecided (rated the model a 3 out of 5)
- descriptors provided concerning the model were "my ability and ease *(of use)* are high" and "with less time constraints, this will be an excellent and implementable model" (S2-1), along with the CIM provides "the instructor with a value theory, tool"
- the model offered what was called "another alternative"
- the *undecided* participant indicated that the model was too complex.

Table 4.6.1.2

Stage 2 Research Trials--Guided Record Responses on Research Question 2(a):
What meanings and interpretations do the research participants give to the
Change Infusion Model concepts?

Research Participant	Findings	Supporting Quotes
S2-1	- participant interpreted the CIM as an engagement in multiple variables of change --- - participant interpreted the CIM impact as time consuming and therefore the model must be utilized in a phased-in manner for a portion of a course, but not to adapt pedagogy that then frames the instructional and learning strategies within a whole course all at once --- - time constraints affect the efficacy of the model	- "the overall model is a helpful way to engage in considering multiple change variables" ------------------------------------- - "the more you create…it seems like my work as a structurer goes up exponentially…it seems to me that there is almost no way you can do it with a whole course… you have to imbed it …in a piece of the course" -"it has to be phased-in, absolutely phased-in" ------------------------------------- -"sometimes the variable being considered *(do)* not lend themselves to hyper-structure, and/or strict timelines" - "still processing the effects of time constraints" -"with less time constraints this will be an excellent and implementable model"
S2-2	- this participant felt the CIM concepts were too complex	- "the sheer complexity of each component makes it somewhat overwhelming to put them all together in a model. Each component is a model in and of itself." -"more time needed to absorb and apply the concept" "not to be done at the last minute or mid-stream" - "the more comfortable with risk, the greater the ability and ease of infusing; the more prepared and planned/organized the course is ahead of time, the more effective the infusing"

Research participant	Findings	Supporting quotes
S2-3	- participant felt the CIM was a necessary component for professional practice	- "I believe that the change infusion model is a necessary component for use in teaching in higher education" -"representative of the change that society and culture is going through at this present time" -provided "another alternative"

Summary of Table 4.6.1.2: *Stage 2 Research Trials--Guided Record Responses on Research Question 2(a):* **What meanings and interpretations do the research participants give to the Change Infusion Model concepts?**
- S2-1 indicated that their "ability and ease are high" when it comes to the CIM
- S2-2 indicated that the CIM concepts were too complex as "each component is a model in and of itself"
- S2-3 indicated that the CIM is a "necessary component for use in teaching in higher education"
- overall, the research participants indicated their understanding of the model as a pedagogical strategy

Table 4.6.1.3

Stage 2 Research Trials--Guided Record Responses on Research Question 3: What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?

Research participant	Findings	Supporting quotes
S2-1	- participant found the information package useful and well organized	- "found it all helpful & organized very clearly"
	---	------------------------------------
	- participant indicated that the collaborative discourse was most useful when learning to use the CIM	- "most useful were the discussions; next were the examples – nothing here was not used"
	---	------------------------------------
	- participant indicated that the time constraint of one academic semester to learn to use the CIM was an issue	- "sometimes the variables being considered do not lend themselves to hyper-structure and/or strict timelines"
	---	------------------------------------
	- participant suggested the model be adapted to allow a phased-in process	- "I need a more phased in implementation"

Research participant	Findings	Supporting quotes
S2-2	- participant indicated that the collaborative discourse was valuable when learning to use the CIM	- "great idea exchange within the conversations" - *(needs the)* "actual face to face and/or electronic simulations of the model's components"
	-- - participant indicated that the time constraint of one academic semester to learn to use the CIM was an issue --	-------------------------------------- - "more time needed to absorb and apply the concepts" --------------------------------------
	- participant suggested a phased-in process for utilizing the model	- "anyone using a model of this magnitude in teaching needs to plan, prepare…try to avoid passing on risk to students in terms of their learning and grades"
S2-3	- participant indicated that the participant information package scenario should be expanded and a chart or figure on the model should be added	- "material provided to support the change infusion model was excellently prepared and organized in a very logical and clear process. The material led the reader through the process in a clear, organized fashion. The material was concise in that it was in-depth but not overly long, allowing the reader to follow the material while maintaining interest and focus. I found all aspects to be useful, and I do not believe that anything was missing. In terms of expanding upon any of the areas, I would have to suggest or recommend expanding upon the scenarios" - "the individual components are well laid out for the instructor to follow…in a very linear sense" - "one thing I believe that may help the instructor in the initial understanding and implementation of the change infusion model is the use of a brief outline of the material, possibly in chart form, to assist the instructor until they are familiar and knowledgeable about the material"

--- - participant suggested that the term "the" stated before the terms used in the CIM indicated that the term was in a closed state and not open for adjustment in the future	--- - "as discussed during the session, the use of the word "the" as a definer before some of the theories may cause misconception and misunderstanding. I would try to avoid the use of the word "the" as it creates the notion that there is only one possible right answer or it creates a more definitive structured tone. As well, creating the notion that there may only be one theory or perspective when in actuality there are numerous avenues to explore or evaluate within each theory.
--- - participant suggested that the CIM process used to inform research participants of the model process and steps should not be spaced out, but given in one session	-------------------------------------- "…like the applicable and theoretical material to be taught/given at roughly the same time"

Summary of Table 4.6.1.3: *Stage 2 Research Trials--Guided Record Responses on Research Question 3:* **What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?**
- the stage 2 research participants indicated that the participant information package was well organized
- a descriptor on the participant information package included "helpful and organized clearly" (S2-1)
- 1 participant suggested providing the information on only the section being discussed on the model and not providing all of the participant information package material up front
- suggestions for the package included expanding the scenario (example) and adding a chart or figure
- the research participants indicated that the instituted collaborative discourse method was valuable when learning the CIM – research participants felt the meetings were "most useful" (S2-1) and established an environment for a "great idea exchange" (S2-2)
- the research participants indicated that the CIM process needed to include "phased-in implementation" (S2-2)
- research participants' indicated that more time (beyond one academic semester to engage with the model) may be needed

4.6.2 Stage 2 Trials--Collaborative Discourse Findings

The stage 2 collaborative discourse findings were obtained by transcribing the audio-recorded discourse into written text. The test was analyzed by conducting focused reviews of the data. Each review was conducted with the use of one of the five discourse evaluation questions for each reading of the text. The findings, presented below, were organized to reveal the participant meanings

for each discourse evaluation question.

4.6.2.1 Stage 2 Trials—Collaborative Discourse Analysis Question #1: What Ways Are the Research Participants Making Use of The Change Infusion Model Implementation Package and the Collaborative Meetings?

A focused reading of the collaborative discourse with the discourse analysis question #1 searched for evidence of two processes utilized in the CIM research including: (a) the use of a participant information package and (b) the use of the collaborative meetings. Learning about the model was advanced with the use of both the package and the collaborative meetings.

The stage 2 participant collaborative discourse data revealed that the participant information package was utilized to develop the research participants' understanding of the model. There were no negative comments stated concerning the participant information package as a whole. However, suggested refinements for the participant information package were offered and included: (a) the elimination of the word "the" prior to the terms listed (b) the movement of the term flexibility effect to the plural form and (c) changing the description of the cognitive and constructive steps as a balance.

The stage 2 collaborative discourse data revealed comments on the placement of the word "the" used prior to the terms outlined in the participant information package. According to the research participants, the placement of the word "the" implied that there was one correct theory or answer and what was stated in the package was "the" correct one. Research participants viewed the use of the term "the" as stating the item was complete and closed. The research participants' information package placed the word "the" prior to the terms "the complexity theory," "the contingency theory," etc. The understandings produced by the research participants indicated that this use of the word "the" did not reflect the ability for the term to be emergent for new knowledge. The discourse concluded that the wording in the CIM participant information

package needed to be adjusted to remove the use of the word "the" prior to listing the terms in order to express the state of being open to emergent knowledge.

The stage 2 research participants discussed the singular form of the term "flexibility effect" that was used in the participant information package. The research participants implied that the singular form meant that there was one correct effect and it was not open to multiple realities. The term was deemed to be open to more than one effect and its representations needed to be in the plural form--or "flexibility effects."

The description of the combination of cognitive and constructivist steps in the CIM was described as a balance between the two elements in the participant information package. The stage 2 research participants noted a tension between the two components and did not believe that there was a balanced state. The research participants discussed the tension perceived as a tug-of-war, not as a scale or balance. These research participants suggested that a state of equilibrium was not found or maintained between the cognitive and constructivist components in the CIM. The research participants determined that a scale concept could not be applied to explain the situation and that the description of a cognitive-constructive balance used was determined to be misleading. The research participants did not conclude during their initial discussion what the relationship between the two elements should be called. In a subsequent stage 2 collaborative discourse meeting, the researcher suggested that a ratio was an appropriate description, and the group agreed. The ratio was determined to be 3 cognitive steps to 2 constructivist steps.

The stage 2 collaborative discourse data revealed that the research participants utilized the meeting method to develop understandings about the CIM. The discourse method provided support for learning and encouraged understanding of the CIM. According to S2-1, "without cognitive dissidence you are never

forced to learn." The research participants used the collaborative forum to interchange ideas, opinions, and comments on the CIM that aided to advance learning the model. The collaborative discourse meetings also permitted the opportunities to emphasize the CIM as a pedagogical strategy.

Overall, a focused reading of the data with discourse analysis question #1 indicated that the research participants utilized the collaborative meeting method and the participant information package to develop understandings concerning the CIM. While developing understandings on the CIM, the stage 2 research participants recommended refinements to the participant information package. After consultation with the Research Committee, the suggested refinements were incorporated in the participant information package. The changes included eliminating the word "the" prior to terms used in the document, the term flexibility effect was made plural and recorded as "flexibility effects," and the description of the cognitive-constructivist steps was described as a ratio.

4.6.2.2 Stage 2 Trials--Collaborative Discourse Analysis Question #2: How is the CIM Process Being Interpreted and Implemented by the Research Participants, and What Are the Arising Issues?

A focused reading of the collaborative discourse with the discourse analysis question #2 searched for evidence of how the CIM process was interpreted and implemented and the arising issues. The findings revealed the stage 2 research participants interpreted the CIM process as a pedagogical strategy. The strategy needed various amounts of time to learn, depending on the participant. In addition, the CIM process was interpreted as circular in nature, and not linear and that paradoxes arose during the CIM process.

The collaborative discourse indicated that the stage 2 research participants interpreted the CIM as a pedagogical strategy. An example of this conscious understanding of the model as a pedagogical strategy was exhibited when S2-1 stated: "I like the idea of infusing complexity into pedagogy." An orientation

for infusing a variety of characteristics of change within pedagogy was illustrated by S2-1 with the statement, "this model allows you to do a lot of options…oh yes, I will implement some of the options."

The research participants indicated various amounts of time were needed for each participant to develop an understanding of the model. There was not one set amount of time in which all research participants could learn the model. This was illustrated by S2-3's statement: "it may take me longer to go through the process of the understanding of the material, but it's coming through." Consequently, learning times differed among research participants.

Research participants revealed their interpretation that the model has a circular nature and not a linear nature. The model described the infusion process as linear--with five steps, numbered 1 to 5. However, a non-linear process was suggested (S2-2). Stage 2 research participants stated that the pervasive nature of change impacted the CIM itself and that all instructors should not be expected to access the CIM in the same manner every time one used the CIM. Research participants indicated the needs of the research participants changed based on the individual and that the changing needs must be accommodated. To accommodate the research participants, the design of the CIM must be open or flexible. The use of the concept of continuous circles or cycles of steps offered the CIM the opportunity to be adapted based on individual needs and to be emergent.

The research participants revealed that the use of the CIM presented paradoxes. The first such paradox was revealed when rethinking pedagogy. Research participants indicated that all instructors could not be expected to have a readiness to rethink pedagogy. S2-1 indicated: "people won't magically know what to do." Rethinking was constructive in nature and S2-1 indicated that rethinking pedagogy was difficult. The difficulty stemmed from demands in constructivist learning approaches that one must learn to construct their own

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knowledge. S2-1 revealed that knowing what to do to rethink pedagogy to construct knowledge was potentially "absolutely world shattering…because their [the instructors'] whole world is constructed in ways that they have never acknowledged explicitly." An instructor may not have explicated components of pedagogy; therefore, a rethinking of pedagogy placed the instructor in a paradoxical situation--one may want to rethink pedagogy but not know what one's pedagogy consisted of.

A second paradox that was revealed involved the readiness to be transformative on cue or to rethink pedagogy when one wanted to do so. S2-2 indicated that if "you say we are now transforming…we are now being flexible" it does not mean that it can happen--a readiness for transforming may not have been achieved. Even when one wanted to rethink pedagogy, one may not be in a state of readiness.

A third paradox concerned keeping educational practice emergent. S2-2 stated, "we talk as if emergence is part of our practice." This participant's opinion was that "most teachers tend to dictate and become very autocratic--even if they are teaching something that is supported to involve emergence or emergent process." Keeping pedagogy emergent was seen as difficult due to the need to meet time constraints established in the educational system and due to the arising paradoxes that must be managed.

As the paradoxical situations became apparent to the research participants, a means to manage the arising issues was presented. S2-1 suggested that the CIM was a valuable process that could be implemented for practical use; however it could not be used to underscore all of one's instructional and learning strategies. A phased-in implementation approach was suggested (S2-1). A phased-in manner afforded an instructor the time necessary to manage and resolve inherent paradoxes. However, not all research participants were in

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agreement. S2-2 indicated that the model was too complex and "perhaps an overall unifying model is a trifle ambitious, both theoretically and practically."

Overall, discourse revealed how the research participants interpreted the CIM and revealed the arising issues. The stage 2 research participants interpreted the CIM process as a pedagogical strategy. However, one participant indicated the steps were too complex to be put together into an overall model for practical use. The other two research participants supported the model for practical use. Suggestions were offered for adapting the model. The adaptation stemmed from disagreeing with the linear path of the steps in the model. The research participants indicated that the steps needed to be repositioned within a circular process. The research participants determined that the process in the model gave rise to paradoxes. The paradoxes concerned (a) the desire without the readiness to rethink pedagogy, (b) the rethinking completed on demand, (c) and an ability to keep one's practice emergent and the management of academic life. The collaborative discourse data was instrumental in revealing the research participants' interpretations of the model.

4.6.2.3 Stage 2 Trials--Collaborative Discourse Analysis Question #3: In What Ways are the Research Participants Interpreting the "Change" Concepts that Underpin the Change Infusion Model?

A focused reading of the collaborative discourse with the discourse analysis question #3 searched for evidence of the ways the research participants interpreted the change concepts that underpinned the model. A variety of interpretations of the concept arose in the collaborative discourse as the research participants considered the CIM and its use. The interpretations of change ranged from (a) the need to learn to create knowledge, (b) that one generally could not be forced to implement with change, and (c) change as workload, language representation, boundaries, technology, transformative learning. In addition, the research participants indicated change required institutional support.

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The data revealed an interpretation that change required learning and the construction of knowledge. S2-1 indicated that "the condition of change stokes the demand for constructivist learning approaches and instructors must learn to construct their change knowledge." This revealed an interpretation that the instructor was responsible for learning to construct knowledge to adapt pedagogy for change.

The collaborative discourse revealed that one generally had a choice and could not be forced to deal with change to translate change knowledge into practice. In the CIM, research participants were expected to develop an awareness of contemporary theories of change for pedagogical use. Yet, the discourse revealed a belief that one could choose to ignore change. Therefore, an awareness and understanding of infusing characteristics of theories of change into pedagogy could be developed, but one could choose not to infuse the elements. In addition, research participants discussed that although an individual could develop understandings concerning concepts of change, they may not be able, or willing, to translate the knowledge into pedagogical practice. The discourse supported the idea that all instructors may not be in the same state of readiness for understanding and/or implementing the CIM. The research participants interpreted that they were not forced to change—they had a choice.

Research participants illustrated that the term change was interpreted in a number of manners. S2-1 indicated change meant an increased workload, could be represented in technological advancements, was represented in the language used to represent terms, and meant stepping outside of one's current boundaries of practice. S2-2 indicated change was transformative learning. S2-1 and S2-3 indicated change increased the need for institutional support for instructors. Overall, the term change was interpreted to have multiple meanings to the research participants.

4.6.2.4 Stage 2 Trials--Collaborative Discourse Analysis Question #4: How are the Pedagogical Practices of the Research Participants Impacted by their Engagement with the Change Infusion Model? Specifically, Did the Change Infusion Model Guide the Research Participants to Consider Infusing Key Characteristics from Theories of Change into One's Pedagogy?

A focused reading of the collaborative discourse with the discourse analysis question #4 searched for evidence of the impact of the engagement with the CIM on the research participants' pedagogical practices.

The collaborative discourse in the stage 2 trials revealed that the research participants understood the CIM concept of infusing key characteristics from theories of change into pedagogy. S2-1 stated, "I like the idea of infusing complexity into pedagogy." This participant also indicated their future use of the model when they stated that the "model allows you to do a lot of options…I will implement some of the options, " along with "the overall concept was helpful" and, with an expanded time frame, "this will be an excellent and implementable model." S2-2 stated the CIM "provided another alternative, another way to reflect on what I've done or what I could do." S2-3 indicated the CIM "provided me with another knowledge level that I didn't have before… another alternative." The collaborative discourse revealed that an engagement with the CIM did indeed shape a conscious awareness of pedagogy informed by theories of change. S2-1 summarized the impact of the engagement with the model by stating, "I think the discourse has shown that change infusion is unavoidable, and why wouldn't we do it!"

The research participants revealed that they considered the use of the CIM in practice. Two stage 2 research participants indicated an orientation to utilize the model in practice. However, the third participant indicated that the model was too complex to implement. Adaptations made to the pedagogical practices of the research participants were unknown. Although some research participants

indicated they would adapt their pedagogy for change, the adaptations were not revealed within these trials.

4.6.2.5 Stage 2 Trials--Collaborative Discourse Analysis Question #5: What Insights Emerge About Processes of Personal Change as an Aspect of University Academic Work Lives?

A focused reading of the collaborative discourse with the discourse analysis question #5 searched for the insights that emerged about the processes of personal change as an aspect of university academic work lives.

The stage 2 collaborative discourse exposed change as having a direct bearing on one's academic work life. The discourse implied tensions arose when working with change in an academic work environment. Tensions related to the CIM spanned the following areas:

- Tension in academic work arose due to a desire to be involved in emergent learning yet feeling the stress of completing the instruction of course content within an allotted time frame,

- Tension arose from the need for a comfort level for change. This tension related to the support one felt they would receive from the academic institution.

- Tension arose as one's pedagogy may not be explicitly understood and subsequently pedagogical adaptations could lead to a frustrating experience, and

- Tension occurred as change affected one's workload, necessitating additional support from the educational institution.

Overall, the research participants revealed that the educational institutional support for instructors working with change would not be provided.

The stage 2 discourse revealed tensions in academic work that stemmed from a desire to be involved in emergent learning, yet feeling constrained by time restrictions. S2-3 indicated that academics must discriminate in the selection of activities they completed to ensure one met a desired educational agenda. S2-3

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revealed time constraints impacted one's academic work life, and emergent learning must not interrupt the established timeframe for completing one's academic requirements. S2-3 expressed that they wanted "to be emergent but they are agenda anxious." The findings indicated that academic work life was challenging as one attempted to develop knowledge in a content-driven environment, given the constraints of time.

Another work life issue that arose in the collaborative discourse related to one's comfort level for change. One needed to have a comfort level for the support one received from the academic institution when working with a change model. S2-1 stated that higher education institutions "are not great risk taking places…everyone feels that every risk is an opportunity for failure…there is a product-based mentality." The collaborative discourse indicated that instructors must discriminate in their choices because the institution may not be supportive of the risks one chose to take. The stage 2 research participants expressed a belief that, for untenured faculty, being adventurous with change can be career-limiting if the institution does not embrace the change.

An additional work life tension expressed was adapting pedagogy may be a frustrating experience. This tension arose from the instructor being unaware of the current elements within pedagogy, and therefore adapting one's pedagogy for postindustrial times may be difficult and frustrating. The collaborative discourse afforded a glimpse into the "insight" (Leonard & Sensiper, 2002) or practical theories of the research participants. Examples included:

- Linking theories and concepts to one's life experiences in order to provide a practical connection between theory and practice (S2-1),
- Adapting assignments to suit the needs of individual students or a particular group (S2-1),
- Using the concept of "unfolding assignments" whereby successive drafts on the same topic are completed, each applying new principles outlined as the course advances (S2-1),

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- Offering an element of dimension to the course by tying everything together (S2-3), and

- Not being segmented, presenting material that is tied together into one working unit (S2-3).

None of the research participants delineated practical theories in a detailed manner. Importantly, none of the delineated practical theories or pedagogy indicated a conflict with the premise of infusion of change.

A final work life tension in academic life revealed that change affected workload and necessitated additional support from the institution. The discourse revealed a belief that instructors needed to plan for dealing with emerging ideas in order to be open to avoid becoming rigid or set within one's activities. There was a general agreement that educational practice needed to be emergent. Yet, S2-2 stated that "we talk as if this emergence is part of our practice--it's supposed to involve emergent ideas but doesn't always." The research participants felt that there was work associated with utilizing the emergent knowledge. Research participants indicated that the work of the pedagogical designer (the instructor) "goes up exponentially due to high structure needs due to the options available in changing designs." It was concluded therefore, that emergent pedagogy increased one's workload.

Research participants stated that when one adapted pedagogy, more work was created. The additional workload was derived from a variety of sources. First, time and effort was needed to consider pedagogical design options. In addition, one needed to prepare for the structural needs when adapting for a pedagogy design option. Research participants indicated the structural needs were high, as time was needed to explain the adaptations, and ongoing guidance was needed when implementing new pedagogical options. S2-1 felt the volume of work for a higher education instructor using the CIM could be "immense." However, S3-2 stated that the introduction of the CIM was timely "because I was beginning to feel stagnant with what I was doing." So, for some research participants, the

extra work may be a worthwhile part of an ongoing effort to remain vibrant as an instructor.

Further, discussions implied that new knowledge placed an instructor in unfamiliar situations. According to S2-2, new knowledge potentially moved an instructor into "that ambiguous place." Being in a place that was unfamiliar required research participants to work through the experience. Support when working through an experience was not seen as being available from the institution. Research participants indicated that there was no ongoing instructor training to aid one to manage tensions created when adapting one's pedagogy.

An overview of the findings for the stage 2 collaborative discourse trials was provided in Tables 4.6.2.1.1, 4.6.2.1.2, 4.6.2.1.3, 4.6.2.1.4, and 4.6.2.1.5 below. The findings were presented as they relate to the inquiry research questions. Following the tables, a summary of the stage 2 trial findings was presented.

Table 4.6.2.1.1

Stage 2 Research Trials--Collaborative Discourse Findings for Research Question 2: What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change.

Research participant	Findings	Supporting quotes
S2-1	- this participant supported the CIM as a method for developing a pedagogy with a design that accommodates key elements of theories of change	- "I like the overall concept of the work that you are doing" - "I thought the overall concept was helpful" - with expanded time (*beyond one academic semester*) to consider/learn the CIM "this will be an excellent and implementable model"
	- this participant indicated that they would implement some of the pedagogical options produced by an engagement with the CIM	- "This model allows you to do a lot of options… I will implement some of the options" - "I like the idea of infusing complexity into pedagogy"
	- this participant indicated that not all individuals are in a state of readiness for understanding and utilizing the CIM concept	- "…if they get it, they get it. If they don't get it, we can't force it– we can't make it happen." "I think part of this change model is that without cognitive dissidence you are never forced to learn…so you don't move into the unfamiliar, strange situation where you have to do something different from what you have done before…and you don't…and they don't want to be in that ambiguous place"

Research participant	Findings	Supporting quotes
S2-2	- participant indicated that the CIM provided an option for pedagogical reflection; they also indicated that the model was perhaps too ambitious and if used, preplanning would be required	The CIM "provided another alternative, another way to reflect on what I've done or what I could do" "the sheer complexity of each component makes it somewhat overwhelming to put them all together in a model in and of itself. Perhaps an overall unifying model is a trifle ambitious both theoretically and practically" "Anyone using a model of this magnitude in teaching needs to plan, prepare and phase in one component at a time; try to avoid passing on risk to students in terms of their learning and grades."
S2-3	- participant supported the CIM as a method for developing a pedagogy that has a design that accommodates key elements of theories of change	"change infusion is unavoidable and why wouldn't we do it?" "I think it has provided me with another knowledge level that I didn't have before…it's provided another alternative"

Summary of Table 4.6.2.1.1 - *Stage 2 Research Trials--Collaborative Discourse Findings for Research Question 2*: **What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change.**

- research participants supported the CIM as a method for developing pedagogy with a design that accommodates key elements of theories of change--S2-1 indicated that - "I thought the overall concept was helpful" and with expanded time (*beyond one academic semester*) to consider/learn the CIM "this will be an excellent and implementable model," S2-2 indicated that the CIM "provided another alternative, another way to reflect on what I've done or what I could do," and S2-3 stated "change infusion is unavoidable and why wouldn't we do it?" along with "I think it has provided me with another knowledge level that I didn't have before…it's provided another alternative"

- S2-2 also indicated an opinion that perhaps the model was too ambitious, as "the sheer complexity of each component makes it somewhat overwhelming to put them all together in a model in and of itself"

- S2-2 also suggested that the use of the model required planning to "avoid passing on risk to students"

- S2-1 indicated that they would implement some of the pedagogical options produced by an engagement with the CIM and stated: "This model allows you to do a lot of options… I will implement some of the options," and "I like the idea of infusing complexity into pedagogy"

- S2-1 stated that not all individuals are in a state of readiness for understanding and utilizing the CIM concept – S2-1 felt "if they get it, they get it. If they don't get it, we can't force it–we can't make it happen."

Table 4.6.2.1.2

Stage 2 Research Trials--Collaborative Discourse Findings for Research Question 2(a): What meanings and interpretations do the research participants give to the Change Infusion Model concepts?

Research Participant	Findings	Supporting Quotes
S2-1	- participant indicated that there were challenges when rethinking pedagogy	- "People won't magically know what to do" when rethinking - "if you are wanting things to be emergent, but you are agenda anxious, then that's a tricky negotiation" "discovery—[means you] step out of your comfort zone"
	- the participant indicated that the placement of the word "the" prior to the name of the theories of change did not allow the model to reflect the ability to be emergent	- "I think the thing that always jumps out at me is the language… The emphasis is on "the" like there's one, we know what it is, here it is, and we're done …it should always be emergent"
	- participant interpreted the term flexibility effect as being open to multiple options and needed to be plural	- suggested the term flexibility effect should be "plural"
	- participant stated that the participant information package as a whole must remain open to new material and that the material included today is not a final and closed document	- "I think it's helpful if it's in my mind that that is not a closed circle--that the material that I'm reading isn't finished"
	- the participant suggested that the term used to explain the use of cognitive and constructive components in the model should not be described as a balance	- "the cognitive-constructive balance is not a balance" - when asked if the term ratio was a better descriptor, responded "yes"

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Research Participant	Findings	Supporting Quotes
S2-2	- participant stated that the CIM design must be flexible and that there were contradictions or paradoxes within the process	- "The theories have to inform your model and vice versa. So you don't start with a theory and then build a model. You don't start with a model and build a theory. They have to be reversant so they are informant. So it is a step lightly… a process that is contradictory"
	- participant indicated that all instructors should not be expected to access the model in the same manner during subsequent uses	"I would see learning as more of a circle than steps. You can enter the circle at any point"
	- the participant indicated that there was a paradox when using the model that included wanting to adapt pedagogy and completing adaptations on demand	- "that's the paradox that you get into with any transformative learning. You say we are now transforming…we are now being flexible…"
S2-3	- participant indicated that they understood the concept of the CIM, but it required time	"…it may take me longer to go through the process of the understanding of the material, but it's coming through"
	- participant indicated that the description of cognitive-constructive balance was incorrect	- "a balance is not the correct term" – when asked they said "yes" that the term "ratio" was a better descriptor

Summary of Table 4.6.2.1.2 - *Stage 2 Research Trials--Collaborative Discourse Findings for Research Question 2(a):* **What meanings and interpretations do the research participants give to the Change Infusion Model concepts?**
- challenges when rethinking pedagogy were raised, and S2-1 indicated that when rethinking pedagogy "people won't magically know what to do" and "if you are wanting things to be emergent, but you are agenda anxious, then that's a tricky negotiation"
- adapting pedagogy required a readiness as S2-2 indicated "that's the paradox that you get into with any transformative learning. You say we are now transforming…we are now being flexible…"
- suggested participant information package refinements included (a) removing the placement of the word "the" prior to the name of the theories of change to allow the model to reflect the ability to be emergent, (b) make the term "flexibility effect" plural to be open to multiple options, and (c) that the term used to explain the use of cognitive and constructive components in the model should not be described as a balance, but a ratio
- it was suggested that the CIM design and participant information package must remain emergent and flexible and all instructors should not be expected to access the model in the same manner during subsequent uses--thus the steps should be organized within cycles.

Table 4.6.2.1.3

Stage 2 Research Trials--Collaborative Discourse Findings for Research Question 2(b): How do the research participants conceptualize their pedagogy at the various stages of the trials?

Research participant	Findings	Supporting quotes
S2-1	- participant indicated that an instructor may be unaware of their own pedagogy - indicated one may not be able to meet the demand of constructing their knowledge for pedagogical use–in addition, an instructor may be unaware of their own pedagogy	"the condition of change stokes the demand for constructivist learning approaches and that instructors must learn to construct their change knowledge. Those two sentences sound so simple…but they are absolutely world shattering. They are very difficult, because their (*the instructors'*) whole world is constructed in ways that they have never acknowledged explicitly" "professors are trained--to cover the content"
	- participant's pedagogy included practical theories that linked life experiences to the theories and concepts	- "yes, linking theories and concepts to life experiences provides a connection between the two"
	- participant's practical theories included flexibility for individual or group needs	"assignments need to be adapted for individual students or groups"
	- participant's practical theories included the concept of assignments that advance with a series of drafts to advance knowledge	- using the concept of "unfolding assignments" (*this included successive drafts on the same topic, each applying new principles outlined as the course advances*)
	- participant indicated that they would use the CIM to inform their pedagogy in the future	- "this model allows you to do a lot of options … oh yes, I will implement some of the options"

Research Participant	Findings	Supporting Quotes
S2-2	- participant indicated that emergence was part of practice–yet, emergence was a difficult position to obtain and that they were not trained in pedagogy	"We talk as if emergence is part of our practice. But, when it comes right down to it, I think most teachers tend to dictate and become very autocratic. Even if they are teaching something that is supposed to involve emergence or emergent process" "Certainly my training was done in graduate school with no training in pedagogy"
S2-3	- participant indicated that their practical theories included the intertwining of elements (including knowledge, current interpretations, and experiences) and that rethinking may aid in not becoming rigid or set within current practice.	"I think that they need to learn how to tie everything together" "Not segmented, but try to bring it all together into one working unit. I try to do that through a critical analysis stage. So their first assignment is based in context–what did you do, what did you learn? And then we start going into the next interpretative-critical stage by bringing in some other material. So did you see this happen? Why do you think this happened? Bring in their material … or even personal experiences. And that's how I approach the course I am teaching now" "It's important to think about our own process because we tend to forget it and it tends to become rigidified into one thing"

Summary of Table 4.6.2.1.3 - *Stage 2 Research Trials--Collaborative Discourse* **Findings for** *Research Question 2(b)***: How do the research participants conceptualise their pedagogy at the various stages of the trials?**
- revealed that rethinking pedagogy may be difficult as an instructor may not be trained in pedagogy, may be unaware of their own pedagogy, and may not be able to meet the demand of rethinking on demand
- emergence was seen as part of practice--yet, emergence was a difficult position to obtain and maintain
- pedagogy or practical theories exposed included the linking of life experiences to the theories and concepts (S2-1), the use of flexibility for individual or group needs (S2-1), the concept of assignments that advance with a series of drafts to advance knowledge (S2-1), and the intertwining of elements (including knowledge, current interpretations, and experiences), (S2-3)
- S2-3 indicated that rethinking may aid in not becoming rigid or set within practice.
- S2-1 indicated that they could and would use the CIM to inform their pedagogy in the future

Table 4.6.2.1.4

Stage 2 Trials--Collaborative Discourse on Research Question 2(c): What are the reported impacts of the Change Infusion Model on the pedagogical approaches of the research participants?

Research participant	Findings	Supporting quotes
S2-1	- participant indicated that due to work load issues, the CIM should not be used with all instructional and learning strategies within a course at once, but could be used with a phased-in approach	- the work of the instructor "goes up exponentially due to high structure needs due to the options available in changing design" - model not to underscore all of one's instructional and learning strategies--but could be managed by incrementally phasing in the options for a pedagogy informed by change
	- participant indicated that higher educational institutions were not fully supportive of instructors taking risks to try new models	- higher education institutions "are not great risk taking places…everyone feels that every risk is an opportunity for failure…there is a product-based mentality" "…as long as you focus on the material…you don't have to worry about the learners' future. Right. And I think that's where the University is going"
	- participant indicated that the CIM may cause increased structural demands and work load volume	"It's like the more you create, the more you work with change models, the more you are willing to do that, it seems like my work as a structurer goes up exponentially" - "the volume of work on the teacher is immense in a change model"
	- participant indicated that the point at which to stop rethinking one's pedagogical design is an unknown	- when changing the pedagogical design, "at what point do you stop?"
	- participant indicated that the educational institution is not always in step with attempts to adapt for the times, there is not always (a) credit for merit/evaluation provided when one	- one needed "currency in your merit (*instructor evaluation)* to reflect the complexity of the course you are attempting"

	attempted to use models, (b) that attainment of tenure was important prior to the use of new models, and (c) overall institutional support was not always provided to instructors attempting to use a new model	
	---	--------------------------------
	- participant indicated that an instructor may want to be emergent and transformative and yet not be able to be	The department "Chair needs to understand what you're trying to do. And you also must be able to manage it within the constraints of the collective bargaining unit (*the union)* if you need teaching assistants, co-ordinators … so it still comes back to managing--being creative within constraints"

"Postsecondary institutions are not great risk taking places. Everyone feels that every risk is an opportunity for failure and not an opportunity for...it's not an opportunity…it's a chance to fail. There is such a product-based mentality in the institution right now that I think a lot of people are afraid to take risks"

- "…if you are an untenured person, it's much more difficult…to feel supported in trying something adventurous"

- just because you want to, doesn't mean you can: "Yes, and that's the paradox that you get into with any tranformative learning" |

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Research participant	Findings	Supporting quotes
S2-2	- participant indicated a belief that pedagogy be emergent and yet this may be a difficult position to obtain -- - participant indicated that an instructor cannot be sure of obtaining educational institutional support for developing an emerging pedagogy	"we talk as if this emergence is part of our practice--it's supposed to involve emergent ideas but doesn't always" ------------------------------------- "Oh no, we are counting on the guidance of the university… (*research participants' laughter)*" - educational institution "would like to think people understand that the future is change based and that we need more competencies…but they don't facilitate it"
	-- - participant indicated that the impact of developing pedagogical knowledge with the CIM included moving instructors to situations or a position that was unfamiliar or uncomfortable	------------------------------------- - new knowledge placed an instructor in "that ambiguous place" with unfamiliar situations - "we need to be able to write a flexible syllabus with constraints. So if you are going to give this kind of option, here are the constraints that you have to work with"
	-- - participant indicated that the impact of a pedagogy infused with change required syllabus constraints to be outlined to manage the potential options -- - participant indicated that the time constraint of one academic semester for the research trials was not enough to learn the CIM	------------------------------------- "So the workload is huge for the instructor, but the level of understanding also goes up for the TAs" ------------------------------------- there were "constraints in the process… we are constrained by the number of weeks in a course, etc." "experiencing the model in a more relaxed time context would be very different and possible more satisfying learning experience"

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Research participant	Findings	Supporting quotes
S2-3	- participant indicated that instructors may want to utilize the CIM to develop an emergent pedagogy, but the demands of the current instructional agenda may cause them to be anxious	-many instructors want "to be emergent but they are agenda anxious" … "instructors must make decisions concerning their activities"
	--	----------------------------------
	- participant indicated that using the CIM may be difficult due to the impact on the structure of the instructional and learning strategies	- "…my issue is not with change, I think it is a necessary premise; but, …my issue is always structure. I have allowed for so much change that–in the past anyway, that students complain that there is not enough structure. That's the other end of it"
	--	----------------------------------
	- participant indicated that instructors needed support from their educational institution when taking a chance to rethink pedagogy with the CIM	- " I think support (*from the educational institution)* is an issue given the situation…support to take chances"
	--	----------------------------------
	- participant indicated time lines to learn the CIM may differ for individuals	- "it may take me longer to go through the process of the understanding …but it's coming through

Summary of Table 4.6.2.1.4: Overview of the Stage 2 Trials—*Collaborative Discourse Findings For Research Question 2(c):* **What are the reported impacts of the Change Infusion Model on the pedagogical approaches of the research participants?**
- research participants indicated that tensions in academic life affected the use of the CIM--tensions included anxiety concerning time available to complete the required course agenda and manage students, along with sufficient resources to manage change (including pedagogical change)
- research participants revealed the model impacted the instructor's available time--it was suggested that time was needed to absorb and apply the CIM concepts--it was also suggested that some instructors required more than the one academic semester provided in the research trials to understand the CIM and to rethink pedagogy
- research participants suggested that expanded timelines (beyond one academic semester) may be required to learn about and to use the CIM because rethinking pedagogy was rife with contradictions
- a phased-in approach was suggested when infusing change within pedagogy—a phased-in approach provided an instructor with the time necessary to manage potential arising tensions/contradictions/paradoxes when utilizing the CIM
- research participants stated that change affected one's work load and the support required from the educational institution may not be provided to assist
- research participants perceived a lack of support from the institution if an instructor should choose to use the CIM
 - it was suggested that untenured faculty may not receive institutional support for attempted pedagogical adjustments and rethinking pedagogy may be risky to one's career
- developing a pedagogy informed by change was considered to be a process that is potentially constrained by the already high demands of one's academic work life.

Table 4.6.2.1.5

Stage 2 Trials--Collaborative Discourse Findings for Research Question 3:
What are the features of a refined framework for pedagogy for contemporary
postindustrial change that emerge from the field research?

Research participant	Findings	Supporting quotes
S2-1	- participant indicated the use of the term "the" in front of the terms made them closed and not open to be emergent --- - participant felt the CIM steps needed to be in the form of cycles to allow emergence	- "I think the thing that always jumps out at me is the language…even the phrase like the flexibility effect. The emphasis on 'the', like the whole definitive article in front stating 'the.' Like there's one, we know what it is, her it is, and we're done" - "I don't know what it should be, I'm just thinking any kind of closure around a piece of discourse that all of a sudden is now closed" --------------------------------------- - "I think it's helpful; it's in my mind that that is not a closed circle--that the material I'm reading isn't finished…that it always should be emergent…or plural"
S2-2	- participant felt the CIM steps should be in the form of cycles to allow for emergence	- "I would see learning as more of a circle than steps. You can enter the circle at any point" - "So I agree with S2-1, that the notion of content…is curious because it contradicts the notion of emergent process or emergent learning. We see that in our methods course…If [one has a] very singular idea of feminism, then you're just not going to see the whole picture"
S2-3	- participant felt the CIM steps should be in the form of cycles to allow emergence	- "Cycles…I don't see it ever ending"

4.6.3   Summary of the Stage 2 Trial Guided Record and Collaborative Discourse Findings

The stage 2 trials data was obtained with a guided record method and a collaborative discourse meeting method. An analysis of the guided records and collaborative discourse data revealed several key findings as illustrated below.

Two of the three stage 2 research participants indicated they were satisfied with the CIM, while one participant was undecided. The stage 2 research participants rated the CIM on a Likert scale of opinion. The ratings included; one participant at 5-*very satisfied*, one participant at 4-*satisfied,* and one 3-*undecided* participant. The undecided participant stated that "due to the sheer complexity of each component makes it somewhat overwhelming." This complexity made the participant undecided about the applicability of the model. Comments provided by the supportive respondents regarding the model included S2-1's comment that the "overall concept was helpful," "a way to engage in considering multiple change variables," and "with less time constraint, this will be an excellent and implementable model." In addition, S2-2 indicated that the model "provided another alternative, another way to reflect on what I've done or what I could do." S2-3 agreed and stated "I think it has provided me with another knowledge level that I didn't have before…it's provided another alternative." The opinion of S2-1 was "I think the discourse has shown that change infusion is unavoidable, why wouldn't we do it?"

The participant information package and the collaborative meeting method were both utilized by the research participants to advance learning about the model.

The participant information package was deemed to be "excellently prepared" (S2-3), and "organized in a logical and clear process" (S2-3). However, suggested refinements included; (a) adapting the language to remove the term "the" prior to descriptions and (b) to make the term flexibility effect plural. Also, the research participants indicated that the description of the relationship between the cognitive and constructive steps needed to be a ratio of 3-2, or 3 cognitive steps to 2 constructive steps. In addition, the stage 2 trials suggested clarifying the description of the scenario used in the model, making it more detailed and adding a chart or figure about the model. The suggested participant information package changes were accepted by the Research Committee and were used to refine the package.

The collaborative meeting method was determined to be "most useful" (S2-1) and provided "great idea exchanges" (S2-2). The collaborative meeting method encouraged awareness and understanding of the CIM as a pedagogical strategy. S2-1 thought the use of the collaborative meetings was valuable and stated, "without cognitive dissidence you are never forced to learn." After consultation with the Research Committee, the collaborative discourse method was continued for use with the model.

The research participants understood the model as a pedagogical strategy that impacted their awareness and orientation for the strategy. S2-1 stated, "I will implement some of the options…I like the idea of infusing complexity into pedagogy." S2-3 indicated the impact provided "another alternative" and was a "necessary component" to avoid becoming stagnant or set in one's practice. However, S2-2 was undecided of the model for practical use due to its complexity.

The research participants suggested that the model could be utilized with a phased-in approach. The model was initially positioned for use with all instructional and learning strategies; however, this was seen as not practical. Adapting all or the majority of one's instructional and learning strategies at once was seen as not practical. A phasing in of the pedagogical options or outcomes from the CIM was therefore recommended.

A design change was suggested to add flexibility within the model. The suggestion was to modify the steps from a linear to a circuitous process. It was determined that user access should be available from any point within the model, rather than forcing a start at step 1 every time the CIM was deployed. The researcher contemplated how to incorporate this in the design of the model. Conclusions were reached among the members of the Research Committee that the cognitive and constructivist steps followed a circuitous route through the utilization of cycles. The model was thus subdivided into two cycles. The first cycle included the cognitive steps (steps 1-3). The second cycle included the constructivist steps (steps 4-5). Both the cognitive and constructivist cycles were established as continuous loops--without an end point. The model was adapted to implement this change.

A suggestion was made concerning the time allowed for an engagement with the CIM and the timing of the distribution of the participant information package. The suggestion was to allow more than one academic semester to engage with the CIM to heighten understanding of the model. As well, it was recommended that the participant information package be provided as required, rather than in one package distributed all at once. However, after consultation with the Research Committee, it was deemed important to have these two elements consistent throughout the research so they were not instituted.

The findings revealed varying interpretations of the term change among the research participants. The concept of change was interpreted in numerous ways

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in the discourse such as increased workload, structural support, language, boundaries of practice, and transformative learning. Thus, change was seen from a variety of perspectives.

During the engagement with the CIM, research participants expressed some of their practical theories or pedagogy. The research participants did not explicate pedagogy in a manner that indicated a full awareness of one's practical theories. However, the exposed pedagogy did not conflict with the idea of infusing change within pedagogy. S2-2 indicated that while emergence is part of higher education pedagogical practice, higher education educators were not trained in pedagogy. Training in the area of pedagogy was seen as being needed for higher educators.

The impact of the CIM included arising tensions and paradoxes. The tension concerned workload, a comfort level for change, the need for institutional support, and the impact of change on one's time. In addition, the participant engagement with the CIM revealed paradoxes. The paradoxes included that all research participants may not have a readiness to rethink pedagogy. Rethinking was constructive in nature, and each individual needed to develop personal directives for the rethinking process and constructing. In addition, rethinking to keep practice emergent was difficult due to the need to meet time constraints established in the educational system and due to the arising paradoxes that must be managed.

4.7 Findings--Stage 3 Research Trials

The stage 3 trials were conducted with the use of a refined model and participant information package. The refinements were based on the changes offered by research participants in the stage 1 and 2 trials and were outlined above. The Research Committee approved all elements that were used to refine the participant information package and the model prior to their use in the stage 3 trials.

The stage 3 guided records included a written submission of opinion and comments on the CIM. The analysis of the guided records utilized reflection types offered by Mezirow (cited in Nicholls, 2001) and central guiding questions (Patton, 2002). The data analysis strategies followed a constructivist perspective in that it looked at the research participants' "constructed realities" (Patton, p. 132).

The stage 3 data was also derived from the collaborative meeting method. Collaborative discourse data was analyzed with the use of "sensitizing concepts" (Patton, 2002, p. 391) that included five pre-established evaluation questions. Each discourse analysis question was used to guide one complete reading of the collaborative discourse data resulting in five separate readings of the data.

The stage 3 findings were organized to present guided record findings and tables that outlined the findings. The collaborative discourse findings were then revealed as they related to the discourse analysis question method and were presented in a series of tables as they related to the Research Questions. At the end of the presented guided records and collaborative discourse findings, a summary was presented.

4.7.1 Stage 3 Trials--Guided Record Findings

The stage 3 research participants provided a written submission of opinion and comments on the CIM with a guided record method. The analysis of the stage 3 guided record responses revealed the research participants' understanding and opinions concerning the use of the CIM. The meaning provided a response to Research Questions 2(a), 2 and 3.

An analysis of all of the stage 3 trials guided records generated a response to Research Question 2(a): *What meanings and interpretations do the research participants give to the change infusion model concepts?* The findings revealed

the research participants understood the CIM as a pedagogical strategy and that the concept was now in their consciousness. The research participants also revealed that the CIM concept of utilizing a collaborative discourse method to learn the pedagogical strategy was valuable. Additional communication methods to aid learning the model were suggested. Also, research participants expressed some practical theories that were interpreted as not conflicting with the concept of infusing change within pedagogy. However, research participants revealed the CIM gave rise to tensions. The tensions arose due to time, workload, and institutional support issues.

The research participants understood the CIM was a pedagogical strategy. Pedagogical meaning was illustrated when S3-2 indicated they had infused contingency theory within pedagogy (as an organizing principle). This participant determined that "the contingency theory… with the concept of manoeuvring between the stable to the unstable, worked when 'new' activity based experiences were introduced into the course" (S3-2). In addition, S3-3 disclosed that the CIM had "moved the subconscious to the conscious." This participant indicated "I will continue to embrace 'change' and ways to incorporate it in my pedagogy"(S3-3). S3-3's statements were interpreted to mean that the research participants would utilize the CIM in practice.

During the constructivist rethinking of pedagogy by the research participants, some pedagogy/practical theories were expressed. None of the research participants indicated a full awareness of their pedagogy/practical theories. The practical theories expressed by the stage 3 trial research participants included:
- Tying one's life experiences to the student experiences,
- Encouraging the use of different models,
- The use of a variety of structures and groups,
- Adjusting for a particular group,

- Observing and getting frequent feedback,
- Being well organized in advance.

None of the practical theories exposed indicated a conflict with the concept infusing characteristics from theories of change within pedagogy.

Research participants revealed that an instructor may want to implement the concepts within the CIM, but impediments in academic life interfered. The research participants indicated that the demands of current practice, and the time allotted to complete the requirements may not leave time for rethinking pedagogy.

Research participants revealed tensions in academic life affected the use of the CIM in practice. The tensions arose from a variety of avenues. First, research participants suggested tension arose from the time available to complete the required course agenda. S3-1 stated that a participant may understand the model and its use but may not be able to use the model in practice due to the anxiety from a high workload. S3-3 supported this statement when they offered, I'm often fighting what needs to get done versus what I would like to do." Thus, there was a tension concerning time needed for emergent practice.

Second, stage 3 research participants revealed tension arose from the use of the CIM as change affected one's workload and the support required from the institution. Support for adapting pedagogy with a change model was not seen as being available from the institution. According to S3-3, higher education institutions failed to support a change pedagogical model because they placed teaching as a lower priority compared to research. S3-1 stated that higher educational institutions were slow when it came to adopting new models and that within some institutions there was resistance to change. S3-3 indicated that the lack of institutional support impacted their experimentation with new models, including the concepts suggested in the CIM. Developing a pedagogy informed by change was considered an activity that was constrained by the

support one received from the institution and the workload demanded in one's academic work life. S3-1 expressed that instructors attempting a new model felt unsupported and that "the institution need[ed] to take a more collaborative journey with me."

The stage 3 guided records revealed that the CIM was a pedagogical strategy that was in the consciousness of the research participants. The research participants also revealed that the CIM concept of utilizing a collaborative discourse method to learn the pedagogical strategy was valuable, and additional communication methods could also aid learning. Research participants expressed practical theories that were not in conflict with the concept of infusing change within pedagogy. However, tensions arose when considering the practicality of the model. The tensions arose due to time, workload, and institutional support issues.

An analysis of all of the stage 3 trials guided records generated a response to Research Question 2: *What is the efficacy of a change infusion model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?* The research participants revealed a general satisfaction level with the model; however, not by all research participants. The CIM efficacy was in the presentation as another option for practitioners that wanted to remain emergent and not stagnant. The research participants indicated an awareness and understanding of the CIM; however, the efficacy of the model in the research participants practice was not revealed.

Two of the stage 3 research participants indicated their level of satisfaction or dissatisfaction with the CIM was 4 out of a possible 5 on a Likert scale of opinion. This level of satisfaction was that of being *satisfied* with the model. One participant was *undecided* and assigned a rating of 3.

All of the stage 3 research participants were asked to rated their ability to use the CIM. All of the stage 3 research participants rated their ability to use the model at 4 or *satisfied*. Even the one participant that was *undecided* concerning the model ranked their ability to use the model as *satisfied*.

The data revealed the need for a model that provided a bridge between practice and the contemporary world of change. This understanding was illustrated by S3-2 when they stated, "there seems to be no match with current pedagogical practices and the 'real' world." This participant determined that the CIM was of value to align pedagogy with postindustrial times. S3-1 illustrated their understanding of the model as a pedagogical strategy with a statement that they had previously introduced complexity and contingency theory within their class "but have not used the theories in my pedagogical design." A new pedagogical option was thus revealed to the participant.

The stage 3 research participants interpreted the CIM as a tool for practical use. This interpretation was illustrated when S3-1 stated the model concept was "in our consciousness now." S3-3 concurred and pronounced the CIM concept "enlightening" and "we embrace it in such as way now that it just becomes part of our routine." The model was seen as aiding to keep one's pedagogy emergent for contemporary postindustrial times and S3-2 stated the model stimulated their practice "because I was beginning to feel stagnant."

The stage 3 findings revealed that the model enabled the cohort of instructional professionals to develop an awareness and understanding of the model as a pedagogical strategy. Research participants indicated that the pedagogical strategy was in their consciousness. In addition, the orientation to infuse characteristics from theories of change in practice was revealed by S3-1 and S3-3. These research participants incorporated change within pedagogy with one learning strategy during the trials. However, a commitment to implement the model in the future was not revealed. S3-3 was hesitant concerning the model's

use because they had not yet "completely flushed out …it's proper use…and overall effectiveness…in my class."

A full understanding of the efficacy of the CIM to enable research participants to frame their instructional and learning strategies in a context of contemporary change was not revealed in the trials. The dissertation trials approved by the Research Committee focused on refining the model and participant information package. Long-term trials with the CIM utilized in practice are needed to advance the understanding of the efficacy of the model.

 An analysis of all of the stage 3 trials guided records generated a response to Research Question 3: *What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?* The research participants did not make suggestions to refine the model; however, suggestions were made to refine the participant information package that outlined the model.

The stage 3 findings offered no suggested adaptations to the CIM itself. The research participants offered suggested changes for the participant information package. The suggestions included a reduction in the number of theories of change from five to two and a change in the distribution process of the package. In addition, research participants raised the issue of one academic semester provided was insufficient time to fully engage with the model.

S3-2 suggested reducing the number of theories that the research participants utilized when learning the model. There were five theories of change offered in the participant information package. S3-2 suggested the subsequent key characteristics within 5 theories of change represented too many characteristics when learning the model-- making the model complex. A concentration on 1-2 theories was suggested.

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Also, one participant indicated the distribution process of the participant information package was an issue. S3-1 suggested that the participant information be distributed in stages. This differed from the method of distribution utilized in the trials when the participant information package was provided at the beginning of the trials. S3-1 wanted the information sub-divided and distributed at intervals.

A suggestion was made that concerned the provision of one academic semester of time for learning to use the CIM. S3-3 suggested that a longer time period was needed to engage and learn to use the CIM. In addition, an increased number of collaborative meetings and an additional communication vehicle, a weekly email update, was suggested for use.

The stage 3 guided record findings were recorded in Tables 4.7.1.1, 4.7.1.2, and 4.7.1.3 below. The findings were presented as they related to the Research Questions. Following the guided record tables, the stage 3 collaborative discourse findings were recorded in additional Tables. A summary of the stage 3 guided record and collaborative discourse findings was then offered.

Table 4.7.1.1

Stage 3 Research Trials--Guided Record Responses on Research Question 2: What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?

Research participant	Findings	Supporting quotes
S3-1	- participant was satisfied with the model --- - participant indicated model efficacy provided them with the ability to use the model in practice …engaged with complexity theory and contingency theory with the model and the model was now in their consciousness	(Satisfaction or dissatisfaction level with the model) 4-*satisfied* -------------------------------------- (Ability to use the CIM in practice) 4--*satisfied* - "Once my thinking focussed in on the theories… I found it easier to start making the applications" - "the complexity theory--this theory was particularly interesting to consciously try" - "the contingency theory--this theory with the concept of manoeuvring between the stable to the unstable worked when "new" activity based experiences were introduced into the course"
S3-2	- participant was satisfied with the model and their ability to use the model	(Satisfaction or dissatisfaction level with the model) 4-*satisfied* (Ability to use the CIM in practice) 4–*satisfied*
S3-3	- this participant was undecided with the model as they has not fully determined it's effectiveness if used in their course --- - participant was satisfied with the ability to use the model in practice --- - efficacy of the model guided this participant to an orientation to incorporate change within pedagogy	(Satisfaction or dissatisfaction level with the model) 3-*undecided* - "as I haven't completely flushed out the change infusion model and its proper use in my course, I am still hesitant to comment on the overall effectiveness of its use in my class" -------------------------------------- (Ability to use the CIM in practice) 4–*satisfied* -------------------------------------- -"this concept has for me now moved the subconscious to the conscious. As such, I will continue to embrace 'change' and ways to incorporate it in my pedagogy"

Summary of Table 4.7.1.1 - *Stage 3 Research Trials--Guided Record Responses on Research Question 2*: **What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?**		

Summary of Table 4.7.1.1 - *Stage 3 Research Trials--Guided Record Responses on Research Question 2*: **What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?**

- 2 research participants ranked their satisfaction level with the CIM as 4 out of a Likert scale of 5, or satisfied – 1 participant was undecided (a level of 3 out of 5)

- all research participants in the stage 3 trials rated their ability to use the CIM in practice as 4 – satisfied

- S3-2 indicated that they had success pedagogically infusing contingency theory and stated "the contingency theory--this theory with the concept of manoeuvring between the stable to the unstable worked when "new" activity based experiences were introduced into the course"

- S3-3 indicated that the CIM "concept has for me now moved the subconscious to the conscious. As such, I will continue to embrace 'change' and ways to incorporate it in my pedagogy" (S3-3). However, this participant indicated they did not know the effectiveness of the model if used in their class.

Table 4.7.1.2

Stage 3 Research Trials--Guided Record Responses on Research Question 2(a): What meanings and interpretations do the research participants give to the Change Infusion Model concepts?

Research participant	Findings	Supporting quotes
S3-1	- participant indicated the CIM was an interesting concept, challenging, and the concept was now in their consciousness	- "at the first introduction, I found it caught my interest" - "absolutely wonderful, informative, a learning experience, was great to feel challenged, found myself thinking about change" - "explanations were clear" - "it is like moving from the unconscious to the consciousness"
S3-2	- participant felt the CIM concept was of value to match pedagogy with the postindustrial change-based times --- - a reality of an educators life was revealed when the participant stated they had "new course" pressures that affected their ability to concentrate on the CIM	- "the concept is, on the whole, a valid and thought-provoking one…formal pedagogy has not kept pace with our rapidly evolving and diverse global community. There seems to be no match with current pedagogical practices and the "real" world (for want of a better word). There may be some small pockets where this concept has already been embraced, but there is not consistency across the broad spectrum of formal education" ------------------------------------- - "I would have found this easier had we not been implementing a brand new course"

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Research participant	Findings	Supporting quotes
S3-3	- participant also revealed that the CIM discussions were "enlightening"	- "I found that the change infusion model concept–which is a completely new paradigm shift for me (as an instructor and a professional)–enabled myself to be comfortable with my pedagogy/teaching philosophy to engage practices 'outside the box.' As such, I found it–and the general discussions regarding new pedagogy models, very enlightening"

Summary of Table 4.7.1.2 - *Stage 3 Research Trials--Guided Record Responses on Research Question 2(a):* **What meanings and interpretations do the research participants give to the change infusion model concepts?**
- the stage 3 research participants interpreted the CIM concepts as interesting and challenging
- descriptors provided included "absolutely wonderful" (S3-1), "the concept is, on the whole, a valid and thought-provoking one" (S3-2), and "very enlightening" (S3-3)
- the concept of the model was now in S3-1 and S3-2's consciousness, and S3-3 found the model of value to match pedagogy with the postindustrial change-based times
- a reality of life as an educator was revealed when S3-3 stated they had 'new course' pressures that affected their ability to concentrate on the CIM.

Table 4.7.1.3

Stage 3 Research Trials--Guided Record Responses on Research Question 3:
What are the features of a refined framework for pedagogy for contemporary
postindustrial change that emerge from the field research?

Research participant	Findings	Supporting quotes
S3-1	- participant suggested that the CIM participant information package be distributed in stages	- "I would have liked the inserts for the theories of change handed out at each stage … I found myself reading ahead, and with my lack of knowledge often confused myself and was anxious for the next meeting to understand"
S3-2	- participant indicated that the collaborative meetings were of value when learning to use the CIM and a longer time frame (more than one academic semester) to learn the CIM would have been of value	- "the collaborative meetings were useful to me *(due to)* establishing a rapport and comfort level with the group members allowed me to feel non-threatened when expressing ideas or opinions…giving me a springboard from which to generate my own ideas and opinions…alleviating anxiety over the expectations for the study… discussing the content of the document in order to make clear any misunderstandings or misconceptions…the 'brainstorming' and sharing of ideas furthered open communication among content… discussion validated personal thoughts and beliefs of the individual about the content…the facilitator's acceptance of any and all contributions in the group discussions furthered open, honest dialogue" - "not having been involved in a project of this depth and magnitude before, I was somewhat overwhelmed to begin with. What probably would have helped me would have been more face-to-face discussions, and, for me, a longer time frame to try and implement some of these theories"
	-- - participant indicated that there were too many theories offered in the participant information package to use with the CIM during one academic semester of time.	-- - "concentrating on one or two theories would focus the participant. A longer time period of implementation would aid this participant."

Research participant	Findings	Supporting quotes
S3-3	- participant indicated that the collaborative meetings were of value when learning to use the CIM and suggested additional communication vehicles (i.e. a weekly email update) -- - participant indicated that the participant information package may have had too much information in it	- "the meetings were very well organized, and assisted greatly--both in direction from the researcher, and in discussion with the other research participants processing the components and expectation of the research project" - "the only suggestion I would have is to incorporate a weekly email update to assist the learning and communication of the model and its challenges" --- - "I found that the individual components were very helpful, and clearly explained the overall model; however, in some instances, it was a considerable amount of information to absorb" - "the material was very helpful and in abundance. Perhaps, in fact, it was too much information--but in general, it was nice to know that the material was there to help us if we needed it! What was most helpful was the design chart which outlined our progress and general expectations of the project"

Summary of Table 4.7.1.3 - *Stage 3 Research Trials--Guided Record Responses on Research Question 3:* **What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?**
- S3-1 suggested the participant information package be distributed in stages
- S3-2 suggested a concentration on 1-2 theories of change in the participant information package
- research participants suggested increasing the number of collaborative meetings and time for the engagement with the model
- an additional communication vehicle was suggested to be a weekly email update
- the provision of a longer time frame (more than one academic semester) to learn the CIM was suggested (S3-2)
- the participant information package was seen as offering too much information, although the information was welcomed

4.7.2 Stage 3 Trial Findings--Collaborative Discourse Findings

The stage 3 trial collaborative discourse method involved audio taping the
meeting discourse and the transcription of the discourse into written text. The
collaborative discourse findings were analyzed with one focused reading of the
text conducted with each of the five discourse analysis questions. The findings
were presented based on the discourse analysis question and then placed into
tables as they related to the Research Questions.

4.7.2.1 Stage 3 Trials--Collaborative Discourse Analysis Question #1:
   In What Ways are the Research Participants Making Use of the
   Change Infusion Model Implementation Package and the
   Collaborative Meetings?

A focused reading of the collaborative discourse data with the discourse
analysis question #1 searched for evidence of the ways the research participants
utilized the participant information package and the collaborative meetings.
The findings revealed the participant information package aided the research
participants' learning of the model. The collaborative meetings were provided
an additional opportunity to confirm one's learning of the model and to express
suggested changes to the participant information package that outlined the
model.

The stage 3 collaborative discourse indicated that the participant information
package and the collaborative meetings were beneficial for aiding learning and
understanding of the CIM. This was illustrated when S3-1 stated that they
appreciated having the participant information package for reference purposes
and that they used the collaborative meetings to confirm their understanding of
the model. In addition, S3-2 stated that the collaborative meetings provided an
opportunity to continuously affirm their understandings of the model. Once an
understanding of the model was affirmed, S3-2 indicated the ideas felt "like a
dam bursting." Also, S3-3 revealed that the collaborative meetings provided a
forum for discussions that were "enlightening."

The collaborative meetings were utilized to offer a suggestion concerning an additional communication strategy when learning the CIM. S3-3 suggested the incorporation of collaborative on-line communication completed on a weekly basis. The on-line communication between the researcher and the research participants was suggested as an additional forum in which to discuss the model.

The research participants also used the collaborative meetings to express suggested changes to the participant information package. The first suggested concerned the use of the word "curriculum." The word "curriculum" was used in the participant information package and described the content that applied to the CIM steps. However, the use of this term was found to cause confusion, as research participants followed a curriculum for the course they were teaching. The use of the term curriculum for the CIM material required research participants to differentiate between the two uses for the word--a curriculum for their course and a CIM curriculum. The second suggested change concerned the number of theories of change offered when learning the CIM. Five theories of change were offered in the participant information package. S3-2 felt that five theories of change and the subsequent number of key characteristics within the theories were overwhelming. S3-3 indicated that the use of five theories was too many and this interfered with their concentration and ability to understand the CIM. Over the course of the collaborative discussion, the researcher suggested the provision of two theories in the participant information package. The stage 3 research participants agreed the presentation of two theories of change would be both helpful and manageable.

The discourse data revealed the research participants used the CIM participant information package to aid learning about the CIM. In addition, the collaborative meeting method provided additional support for the learning with opportunities that further developed and reinforced understanding of the CIM. The research participants used the collaborative forum to learn about the model,

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express their understandings, to exchange ideas, opinions, and comments on the CIM, the participant package content, and arising issues. The collaborative discourse meetings also allowed the researcher additional opportunities to emphasize that the CIM was a pedagogical strategy. The two elements, the participant information package and the collaborative meetings, provided the basis of knowledge for learning the CIM.

4.7.2.2 Stage 3 Trials--Collaborative Discourse Analysis Question #2: How is the CIM Process Being Interpreted and Implemented by the Research Participants and What are the Arising Issues?

A focused reading of the collaborative discourse data with the discourse analysis question #2 searched for evidence of the participant interpretations on the CIM process and the arising issues. The findings revealed the research participants interpreted the CIM as a pedagogical strategy. The arising issues were revealed to include paradoxes as research participants were expected to develop their own questions during the rethinking of pedagogy without a means to determine if the questions posed were correct. An additional paradox included that the correct amount of infusion of change was unknown. Also, the realities of practice challenged research participants and adapting pedagogy increased the pressure on an instructor's available time, workload, and required institutional support.

The research participants revealed an understanding of the CIM as a pedagogical strategy. Gay's (1995) four stages of infusion were used to create the foundational framework of the CIM and the revelation of an understanding of the four stages indicated that the research participants understood the model was designed for use as a pedagogical strategy.

The inclusion stage was completed as research participants reviewed facts on the context and the premise of the model. The inclusion stage required time for research participants to develop an understanding of the topic. An understanding of the CIM was developed as the research participants were

provided a verbal review of the participant information package and discussed understandings of the model in the collaborative discourse. The research participants gained a consciousness or awareness of the CIM through this process. A consciousness pertaining to the model was exhibited by S3-2's statement that the CIM was valuable "because it provides a backbone of support to make you comfortable with change…it's a nice rationale."

Research participants engaged in the deconstruction stage when they considered theories of change for infusion within pedagogy. The research participants deconstructed theories in a search for the key characteristics. This was revealed as research participants indicated there were too many theories of change, making this component complex or difficult. S3-3 stated, "what I found was you gave us too much." The issue of too many theories presented in the participant information package is explored later within this document.

Evidence of the transformation stage was revealed when research participants actively engaged in the constructivist CIM steps that conceptually infused theories of change within pedagogy. S3-1 and S3-2 illustrated transformation stage activity when they applied a characteristic of contingency theory. These two research participants identified a key characteristic of contingency theory included that no single structure "is superior to all others in all cases" (Owen, 2001, p. 399). These two research participants demonstrated that they could adapt pedagogy to express this characteristic by creating an open question and answer period during their classes. They abandoned their usual formal structure and "sat in front of the class… [and said] you are welcome to our brains…and the questions were phenomenal…we bounced off one another …with no rehearsal." In addition, the transformation stage was illustrated by S2-1's statement, "this model allows you to do a lot of options…oh yes, I will implement some of the options."

The stage 3 collaborative discourse indicated that the research participants' interpretation of the CIM followed the four stages of infusion offered by Gay (1995). Therefore, the research participants interpreted the CIM concepts in the designed manner--as a pedagogical strategy.

The stage 3 research participants exposed paradoxes that arose when engaging with the CIM. The adaptation of pedagogy for postindustrial times with constructivist methodology was revealed to be rife with contradictions or paradoxes.

A paradox was revealed when research participants were expected to develop their own questions during the rethinking of pedagogy. There was no way of determining if the questions posed during rethinking of one's pedagogy for postindustrial times were correct.

Another paradox concerned the number of key characteristics from the theories of change that needed to be infused to create a pedagogical impact. The correct number of theories infused for a pedagogical impact was unknown. Individual research participants determined the amount of change they incorporated in their pedagogy--without knowing the correct answer.

A final paradox involved the realities of an instructor's daily practice. The day-to-day pressures and challenges under which an instructor typically had to operate were interpreted as making it difficult for instructors to adapt for the times. Adapting for the times increased the pressure on an instructor in the areas of one's available time to manage the adaptations, the extra workload involved when adapting, and the need for institutional support when using a change model.

This analysis revealed that the stage 3 research participants interpreted the CIM as a pedagogical strategy. Paradoxes were revealed that related to the realities of daily practice and changes in pedagogy.

4.7.2.3 Stage 3 Trials--Collaborative Discourse Analysis Question #3: In What Ways are the Research Participants Interpreting the "Change" Concepts That Underpin the Change Infusion Model?

A focused reading of the collaborative discourse data with the discourse analysis question #3 searched for evidence of the participant interpretations on the 'change' concepts that underpinned the model. An interpretation of the concept change indicated that one could not be forced to change and/or one may not be able to translate change knowledge into practice.

The collaborative discourse indicated an understanding among the research participants that one could not be forced to institute change into practice. Instructors had the right to ignore their knowledge concerning change in a purposeful manner. An instructor could therefore develop pedagogical knowledge for change-based times and choose to not implement the knowledge.

In addition, research participants revealed that an instructor may develop pedagogical knowledge for change-based times and may not be able to translate this knowledge into practice. Thus, an instructor willing to implement constructed knowledge to change pedagogy for the times may not be able to do so.

The discourse supported the concept that all instructors may not be in a state of readiness for an awareness or orientation for implementing the CIM.

The findings revealed that if an instructor was not willing, did not understand, or was not in a state of readiness for change--including pedagogical change-- then change could not be imposed.

4.7.2.4 Stage 3 Trials--Collaborative Discourse Analysis Question #4: How are the Pedagogical Practices of the Research Participants Impacted by their Engagement with the Change Infusion Model? Specifically, Did the Change Infusion Model Guide the Research Participants to Consider Infusing Key Characteristics From Theories of Change Into One's Pedagogy?

A focused reading of the collaborative discourse data with the discourse analysis question #4 searched for evidence of the impact of the CIM engagement on the research participants' practices. The stage 3 findings indicated the research participants were guided by the CIM to develop a conscious awareness for infusing key characteristics from theories of change as a pedagogical strategy. Two research participants indicated an opinion was interpreted that they may use the model in practice in the future. The other participant was undecided concerning the model.

The discourse revealed the research participants understood the pedagogical CIM concept was to infuse key characteristics from theories of change within pedagogical practice. A conscious awareness of the pedagogical option to infuse change was revealed. This was illustrated when S3-1 stated, "I am currently introducing complexity and contingency theory in class but have not [previously] used the theories in my pedagogical design." Also, S3-3 indicated an understanding that the CIM moved " from the subconscious to the conscious" and that "we understand it in a new consciousness."

Two research participants revealed an orientation for the infusion of key characteristics from theories of change into pedagogy. S2-1 stated: "this model allow[ed] you to do a lot of options…I will implement some of the options," and "I like the idea of infusing complexity into pedagogy." In addition, during the engagement with the model, S3-1 and S3-2 adapted pedagogy by expressing a characteristic of complexity theory within their practice. These research participants framed a question and answer period used as a learning strategy with a characteristic from contingency theory—that there was no one correct

structure for all cases. The structure was contingent on the conditions. The
infusion of this characteristic produced a structure that they had not tried
previously. A free form structure was instituted that moved the research
participants beyond the normal boundaries utilized, and in this case, it was
successful. The use of a free form structure for the question and answer period
provided another pedagogical option for the research participants.

The third participant indicated that the model provided "a nice rationale" and "I
guess we embrace it in such a way that it just becomes part of our routine" (S3-
3). This participant also indicated that the use of the CIM model in practice did
not require changes to the current course goals or objectives. However, no
evidence of the use of the model in practice or that they would utilize the model
in future practice was revealed.

The collaborative discourse afforded a glimpse into pedagogy (or practical
theories) of the research participants. The pedagogy explicated included:
- Linking theories and concepts to one's life experiences in order to
  provide a practical connection between theory and practice,
- Adapting groups utilized--adaptations based on numbers, members,
  rotating groups, and using feedback groups,
- Understanding that what worked well with one group may not work
  with another group--how one teaches depends on the audience,
- Observing and getting constant feedback,
- Being very well organized in advance--including having more
  content to share than can be completed within the timeframe, and
- Being flexible--ability to adjust to a particular group.

The research participants did not describe their practical theories in detail. The
practical theories exposed promoted flexibility, organization, feedback,
understanding and adapting for the particular group. The research participants
did not reveal how they would adapt their practical theories after the
engagement with the CIM. However, none of the exposed pedagogy indicated a

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conflict with the premise of the CIM to infuse key characteristics from theories of change.

Overall, the stage 3 research participants indicated the engagement with the model created an awareness of the CIM concept to infuse theories of change within pedagogical practice. Two research participants revealed the use of the model in practice. However, the future orientation of the research participants for using the model in practice was not revealed.

4.7.2.5 Stage 3 Trials--Collaborative Discourse Analysis Question #5: What Insights Emerge About Processes of Personal Change as an Aspect of University Academic Work Lives?

A focused reading of the collaborative discourse data with the discourse analysis question #5 searched for evidence of the insights that emerged concerning processes of personal change as an aspect of university academic work life. The findings revealed that change had a direct bearing on one's academic work life.

A variety of tensions that arose as academic work issues were discussed in the discourse that spanned the following areas:

- Tensions due to required activities versus time to complete what one would like to do,
- Tensions due to workload,
- Tensions as change moved one outside a comfort level,
- Tensions in academic work as educational institutions adapted slowly for change, and
- Tensions due to feeling unsupported if one utilized a change model.

Research participants indicated that tensions in academic work life stemmed from the desire to be involved in emergent learning yet feeling constrained by time and not being able to accomplish what one wanted to complete. The discourse suggested that change required time--time that an instructor may not

have in their busy lives. This was illustrated when S3-3 stated: "I'm often fighting what I need to get done versus what I would like to do." Anxiety was the tension created by time constraints. Thus, academic work life was challenging as one attempted to develop emergent knowledge and completed all required academic elements within the constraints of time.

Tension in academic life was also revealed to stem from change as it affected one's workload and required additional support from the institution. Although there was general agreement that educational practice needed to be emergent; tension arose from emergent practice. S3-2 indicated that some educators felt change was a "good thing…but if it means I have to change x, y, or z…then forget it." Therefore, some research participants could not be expected to want to deal with an increased workload when utilizing a change model. However, S3-2 stated that the introduction of the CIM was timely "because I was beginning to feel stagnant with what I was doing." The extra work was worthwhile for some educators as part of the ongoing efforts to remain vibrant as an instructor.

Another tension concerned one's comfort level for change. There was a revealed absence of a comfort level for change due to a lack of support research participants felt they received from their academic institutions when they were attempting to effect change. S3-2 stated that if they felt a movement beyond their comfort level, they tended to pull back. S3-3 explained that one pulled back due to a fear that a required level of support by the institution was not provided for those attempting to try something new. Research participants expressed that instructors must be discriminating in their choices, as the higher education institution was not supportive of the risks taken. Research participants discussed a belief that being adventurous was potentially career limiting—especially for untenured faculty. One needed a personal comfort level for the risk of adapting pedagogy.

The institutional support that was needed for educators that used a change model was expressed as the (a) support of the Chair of the academic department to the idea of pedagogical change and experimentation and (b) financial support to provide the necessary teaching assistants. Overall, the research participants felt that the university emphasized research and an academic's main currency within the institution was research. Therefore, the research participants questioned whether higher education institutions actually provided the required support to an instructor interested in the CIM. The stage 3 research participants expressed a feeling of being without support if they tried a new concept. If they looked for support from the institution, they expected it to come at a "snail's pace" (S3-1). S3-1's opinion was that when it comes to pedagogy and teaching, "the institution needs to take a more collaborative journey with me."

The stage 3 collaborative discourse findings were outlined in Tables 4.7.2.6, 4.7.2.7, 4.7.2.8, 4.7.2.9, and 4.7.2.1.1 below as they related to the research questions. A summary of the stage 3 guided record and collaborative discourse findings was presented after the tables.

Table 4.7.2.6

Stage 3 Research Trials--Collaborative Discourse Findings For Research Question 2: What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?

Research participant	Findings	Supporting quotes
S3-1	- participant indicated that they were pleased to be involved in the trials and understood that the CIM encouraged the use of theories of change beyond a teaching strategy to a pedagogical strategy	"Well I feel good being involved… I really appreciated the meetings--the face-to-face so that I could confirm that I was thinking on the right track" … "this [information package] is good for reference" "I am currently introducing complexity and contingency theory in class but have not [previously] used the theories in my pedagogical design"
	- participant developed an awareness of the CIM as a pedagogical strategy and indicated an orientation to use the model in practice	- the CIM: "it's in our consciousness now" - participant felt that their engagement with the CIM validated "that it's okay to look at change" … "the discourse, it gives me another level of reflection" "Well it has created a change in me. I think in all of *us [the research participants]* as we search to learn this" Asked: So you can use it (the CIM) in pedagogy to frame delivery? "Ya, that's right"

Research participant	Findings	Supporting quotes
S3-2	- participant supported the CIM as a tool that provided a rationale for change and encouraged insights for change	the CIM was valuable "because it provides a backbone of support to make you comfortable with change…it's a nice rationale" "Well it certainly made me look at the way I do things"
S3-3	- participant developed an awareness of the CIM that was in their consciousness and stated an orientation to utilize the model as part of their routine	- the way to describe the concept and learning on the CIM was "to move from the subconscious to the conscious" - "It's valuable in a sense …so you can get with your colleagues, with the administration …and support new changes. So it's a nice rationale, so as a model it's nice to know that there's all of these new educational models out there" - "I guess we embrace it in such a way now that it just becomes part of our routine" - " I like the notion of change. I get bored as a person if it's the same old"

Summary of Table 4.7.2.6--_Stage 3 Research Trials--Collaborative Discourse Findings For Research Question 2_**: What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?**

- stage 3 research participants stated support for the CIM and indicated an awareness of the model as a pedagogical strategy
- S3-1 stated that they understood that the CIM encouraged the use of theories of change beyond a teaching strategy to a pedagogical strategy and that "it is in our consciousness now," that "it has created a change in me," and when asked: So you can use it (the CIM) in pedagogy to frame delivery? - this participant responded "Ya, that's right"
- S3-2 stated that the CIM was valuable "because it provides a backbone of support to make you comfortable with change…it's a nice rationale" and that "it certainly made me look at the way I do things"
- S3-3 indicated that "I guess we embrace it in such a way now that it just becomes part of our routine"
- the CIM had the efficacy to guide some research participants to a stated orientation to infuse change within pedagogy

Table 4.7.2.7

Stage 3 Research Trials--Collaborative Discourse Findings For Research Question 2(a): What meanings and interpretations do the research participants give to the Change Infusion Model concepts?

Research participant	Findings	Supporting quotes
S3-1	- participant indicated that too many theories of change were offered when learning about the CIM--they agreed that only two theories of change were required for the learning process --- - participant indicated that the term curriculum represented (a) the CIM curriculum, and (b) the course curriculum. This was found to be confusing	"there's too much in the book" (referring to the theories of change) .. when discussing using only two theories as an appropriate number they indicated "yes" ----------------------------------- "when you are using the work curriculum the way you were, it's in this book? But I'm also dealing with the CIM and the curriculum in my course, right?"
S3-2	- participant indicated that there were too many theories offered when learning about the CIM	"too many change theories, "my feeling was of being overwhelmed"
S3-3	- participant indicated that there were too many theories offered when initially learning about the CIM --- - participant suggested an expansion of the collaborative discourse to include on-line chats --- - participant indicated that their use of the CIM would not require adjustments in their goals and objectives	- "Now what I found was you gave us too much" *(too many theories of change)* ----------------------------------- - suggested, "every off week we have an on-line chat" ----------------------------------- - when discussing the need to adjust goals and objectives to use the CIM: "Well, no"

Summary of Table 4.7.2.7--*Stage 3 Research Trials---Collaborative Discourse Findings For Research Question 2(a):* What meanings and interpretations do the research participants give to the Change Infusion Model concepts?
- an interpretation was that the collaborative discourse method could be expanded and other communication vehicles utilized such as on-line chats to advance emergent options for the CIM
- research participants indicated that the CIM benefited from fewer theories of change being offered when learning about the CIM—research participants agreed with providing only two theories of change to begin the learning process
- S3-3 interpreted that the use of the CIM would not require adjustments in their course goals and objectives
- S3-1 as they found the use of the term curriculum used to represent the CIM information caused confusion as the instructors were using the term curriculum when they referred to their course.

Table 4.7.2.8

Stage 3 Research Trials--Collaborative Discourse Findings For Research Question 2(b): How do the research participants conceptualise their pedagogy at the various stages of the trials?

Research participant	Findings	Supporting quotes
S3-1	- indicated that their practical theories included bringing in the instructor's experiences	"I tie a lot of my life experiences in to give them experiences to tie to theirs"
	- participant indicated that their practical theories included encouraging the use of different models	"If I was going to expect them to do different models, then I had to model them myself"
	- participant indicated that using the CIM would not negatively affect their current instructional and learning strategies	- when discussing a potential negative effect of the CIM on instructional and learning strategies currently being used: "No I don't see it" (*affecting the activities negatively*)
	- during the engagement, this participant used the CIM and determined that they wanted to be open to a variety of structures—the participant used a structure not previously utilized--they provided unstructured time--this structure placed the participant in an uncomfortable position of potentially being unprepared for the questions posed - the students asked questions about the course topics and the open, new structure used within pedagogy was successful	- "We sat in front of the class totally unprepared… [we said] you are welcome to our brains… and the questions were phenomenal… we bounced off one another… with no rehearsal" - So you expanded outside your boundaries?: "And that was something " (discussing the open question period)

Research participant	Findings	Supporting quotes
S3-2	- participant indicated that offering an element of the contemporary societal change within one's pedagogy was important	- when discussing the importance of change and offering an element of change through one's pedagogy: "Oh yes. You can't get stuck in a time warp…you have to move with what's in front of you" …"I think I'm stuck in a comfort level"
	--	------------------------------------
	- participant indicated that their practical theories included varied group work as valuable	"I vary the positions of the groups by numbers and by members–so it's not all the same people doing the same thing. ..I use a variety of group activities--including feedback groups and rotating groups"
	--	------------------------------------
	- participant indicated that their practical theories included adjusting for the particular group and being well organized	- "what worked well with one group may not work with another group–how one teaches depends on the audience … we do change to adapt to the group… the prior knowledge and experience that they [the instructor] bring drives what you do and how you present it" - "observing and get feedback" - "I like to be organized and planned well in advance with more information to share or to get the group involved in than I will have time to do. I know I'm flexible, because when I see them asking questions or talking about something, then okay we won't do that, we'll skip these little bits and we'll concentrate on this" (what makes you a good instructor is the *ability to adjust-- "yes"*)

Research participant	Findings	Supporting quotes
S3-3	- participant indicated that the CIM was in their consciousness	- when discussing the CIM: "I was just wondering if the way to describe it maybe is moving from the subconscious to the conscious …we understand it in a new consciousness"
	---	-------------------------------------
	- participant included feedback as a priority in their practical theories	- "I think the one thing that I'm going to include in my pedagogy as in terms of something new is the importance of feedback…because it ties into the fear and if it's not working, then you get your feedback right away to validate what you're doing"

Summary of Table 4.7.2.8--*Stage 3 Research Trials--Collaborative Discourse* Findings For *Research Question 2(b)*: How do the research participants conceptualize their pedagogy at the various stages of the trials?
- S3-1 indicated that their practical theories included bringing in the instructor's experiences and encouraging the use of different models--during the engagement, this participant used the CIM and determined that they wanted to be open to a variety of structures--including one not previously used--they used unstructured time-- this position placed the participant in an uncomfortable position of potentially being unprepared for the types of questions--the attempt to vary the structures used within their pedagogy was successful
- S3-1 indicated that using the CIM would not negatively affect the current instructional and learning strategies
- S3-2 indicated that pedagogy included an element of the contemporary societal change, varied group work, and adjusting for the particular group
- S3-3 indicated that the CIM was in their consciousness and indicated that feedback was a priority in their practical theories.

Table 4.7.2.9

Stage 3 Research Trials--Collaborative Discourse Findings For Research Question 2(c): What are the reported impacts of the Change Infusion Model on the pedagogical approaches of the research participants?

Research participant	Findings	Supporting quotes
S3-1	- participant indicated that higher educational institutions were slow in adopting new models--that some institutions were resistant to change-- and that the institution needed to be more collaborative when it concerned instructors and emergent development	- "The process for change within a university …is beyond snail" - when it comes to pedagogy and teaching, "the institution needs to take a more collaborative journey with me" "A lot of people resist change"
	--- - participant indicated that instructors felt unsupported by the educational institution when using a change model	---------------------------------- "So I'm moving ahead with all of this change and it's like I'm out on a limb"
	--- - participant indicated that instructors may understand the CIM but may not be able to use the model or may not be willing to manage the work load issues of utilizing the model	---------------------------------- "they may understand it [the CIM] intellectually but not be able to translate it into any kind of action" " they may understand that it is a good thing… but if it means I have to change x, y, or z…then forget it"
S3-2	- participant felt the impact of the CIM included stimulating the instructor and alleviating a stagnant position	- the introduction of the CIM was timely "because I was beginning to feel stagnant with what I was doing" - "…want to be involved in emergent learning but there's anxiety… if it's not in the comfort level, I pull back"

Research participant	Findings	Supporting quotes
S3-3	- participant indicated that the CIM may be something that the instructor wants to utilize, but the demands of what must be done may not leave time for rethinking pedagogy	"I'm often fighting what I need to get done versus what I would like to do"
	- participant felt that higher education institutions placed teaching as a lower priority compared to research	"I don't feel there is always the same emphasis or importance put on what you teach. It's just get the teaching out of the way and worry about your research" - "the ever-increasing de-emphasis of education vs. research…we get more students and there's less emphasis on it. …That the collateral for each of us is really very obvious that it is research"
	- participant indicated that the lack of support by the educational institution impacts their experimentation with new models--the educational consumer may also influence one's attempts at trying new models	- "…my biggest limitation is for experimenting is administration" - "savvy consumers today mean you can't try something new in case it fails"
	- participant indicated that tenure is a good thing to have if trying new models	- "I'm glad I've got tenure!"
	- participant felt that there were individuals resistant to change in higher education institutions	- change "resisters are people that don't even volunteer for things like this"

Summary of Table 4.7.2.9--*Stage 3 Research Trials--Collaborative Discourse Findings For Research Question 2(c):* **What are the reported impacts of the Change Infusion Model on the pedagogical approaches of the research participants?**
- the reported impact of the CIM on the pedagogical approaches for S3-2 was a stimulation, thus alleviating a stagnant position. Overall, the impacts were reported to include time demands with an increased work load, and risks
- risks were arising from attempting a new model while being unsupported by the educational institution (S3-2) as the institution places teaching lower in priority to research (S3-3)
- S3-2 indicated that higher educational institutions are slow when it comes to adopting new models and that some within the institutions are resistant to change
- S3-3 indicated that the lack of support by the educational institution impacted their experimentation with new models--the educational consumer (the student) may also influence one's attempts at trying new models
- the institution must support emergent development of the instructors (S3-2)
- S3-2 indicated that instructors may understand the CIM but may not be able to use the model or may not be willing to manage the work load issues of utilizing the model
S3-3 stated that tenure is a good thing to have if trying new models.

Table 4.7.2.1.1
Stage 3 Research Trials--Collaborative Discourse Findings For Research Question 3: What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?

Research participant	Findings	Supporting quotes
S3-1	- participant indicated that there were too many theories offered in the CIM participant information package	- "Well yes, there's too much [number of theories] in the book [participant package]"
S3-2	- participant indicated that they had questions concerning understanding disorganized capitalism	- "Disorganized capitalism, I'm still not, I can't connect that."
S3-3	- participant indicated that there were too many theories offered in the CIM participant information package	- "Now, what I found was you gave us too much" "Too many theories"
Summary of Table 4.7.2.1.1--*Stage 3 Research Trials--Collaborative Discourse Findings For Research Question 3***: What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?** - no suggested changes were offered for the framework of the CIM - the suggested changes to the participant information package included reducing the number of theories of change offered for learning to use the CIM and S3-2 required clarity concerning the concept of disorganized capitalism.		

4.7.3   Summary of the Stage 3 Trial Guided Record and Collaborative Discourse Findings

The stage 3 research participants illustrated an understanding of the CIM as a pedagogical strategy. Research participants indicated that the strategy was now in their consciousness and provided a new pedagogical option. Thus, the research participants developed an awareness and understanding of the model.

Two of the stage 3 research participants indicated their level of satisfaction or dissatisfaction with the CIM as 4 out of a possible 5 on a Likert scale of opinion. This level of satisfaction was that of being *satisfied* with the model. One participant was *undecided* and assigned a rating of 3. All of the stage 3 research participants were asked to rate their ability to use the CIM. All of the stage 3 research participants rated their ability to use the model at 4 or *satisfied*.

Even the one participant that was *undecided* concerning the model ranked their ability to use the model as *satisfied*.

Descriptors provided by the research participants illustrated their understanding of the model as "absolutely wonderful," and "informative" (S3-1). In addition, research participants indicated that "the concept [was], on the whole, a valid and thought-provoking one" (S3-2), and the model was "enlightening" (S3-3).

An orientation to infuse characteristics from theories of change in practice was revealed by two research participants. These research participants incorporated change within pedagogy with one learning strategy during the trials. These research participants indicated that they might use the model in practice in the future. S3-2 stated that the model "certainly made me look at the way I do things," and "I guess we embrace it in such a way now that it just becomes part of our routine." While, S3-3 stated, "this concept has for me now moved the subconscious to the conscious. As such, I will continue to embrace 'change' and ways to incorporate it in my pedagogy." The third participant was undecided concerning the model's use because they had not completely determined its overall effectiveness for use in their practice.

Research participants did not reveal how change would be infused within pedagogy in the future. The practical theories expressed by research participants during the stage 3 trials were interpreted to not be in conflict with the concept of infusing change within pedagogy. However, these expressed practical theories did not reveal how change would be infused in the future. Overall, a commitment to implement the model in the future was not revealed. Thus, a full understanding of the efficacy of the CIM to enable research participants to frame their instructional and learning strategies in a context of contemporary change was not obtained during the trials. The trials offered feedback for refining the model and the information outlining the model prior to long-term trials with the model used in practice.

The participant information package and the collaborative discourse method were the vehicles that provided the basis of knowledge for learning the CIM. Both vehicles were deemed valuable for learning the model.

The participant information package provided the written explanation of the model. During the trials, research participants suggested changes be made to the package. The suggestions included a reduction in the number of theories of change from five to two and a change in the distribution process of the package. There were five theories of change offered in the participant information package for use when learning the model. The research participants indicated that the number of key characteristics within five theories of change represented too many characteristics when learning the model-- making the model complex. A concentration on 1-2 theories was suggested. In addition, the research participants revealed that the use of the term curriculum used to refer to the CIM material caused confusion for research participants as they had a course curriculum. Research participants also suggested that greater detail was required in the scenario offered within the package.

A suggestion was made that the participant information package be distributed to research participants in stages, instead of all at once. This differed from the method of distribution utilized in the trials when the participant information package was provided at the beginning of the trials.

The collaborative discourse method provided additional support for learning the model with opportunities that further developed and reinforced an understanding of the CIM. This method was deemed valuable for learning the model and according to S3-2, provided "a springboard from which to generate my own ideas." In addition, two communication methods were suggested to increase the opportunities to learn the model. The suggested vehicles were on-line chats and weekly email updates.

During the collaborative discourse, research participants revealed their interpretations of the concept of change that underpinned the model. The interpretations included that one could not be forced to change. In addition, an instructor may not be able to translate change knowledge into practice. Thus, an instructor willing to implement constructed knowledge to change pedagogy for the times may not be able to do so. The discourse supported the concept that all instructors may not be in a state of readiness for an awareness or orientation for implementing the CIM.

The research participants did not offer suggestions for adapting the CIM itself; however, paradoxes and tensions were revealed when considering the practicality of the model. The paradoxes included that research participants were expected to develop their own questions during the rethinking of pedagogy without a means to determine if the questions posed were correct. In addition, the correct amount of infusion of change was unknown. Also, the realities of practice challenged research participants as adapting pedagogy to remain emergent increased the potential for tension on the instructor.

Tensions in emergent practice arose due to pressures on an instructor's available time, workload, the support needed from the institution when one used a change model, and one's comfort level for change. Although there was general agreement that educational practice needed to be emergent; tensions needed to be managed. One participant indicated that the extra workload that stemmed from change was worth the effort because change kept an instructor vibrant. However, research participants discussed a belief that being adventurous was potentially career limiting—especially for untenured faculty. One needed a personal comfort level for the risk of adapting pedagogy.

Research participants indicated that institutional support was needed for educators that used a change model. The support for the idea of pedagogical

change and experimentation was required from the Chair of the academic department, along with the required financial support for the necessary teaching assistants. Research participants indicated that the university emphasized research and questioned whether higher education institutions actually provided the required support to an instructor interested in the CIM. The stage 3 research participants expressed a feeling of being without support if they tried a new concept. If they looked for support from the institution, they expected it to come at a "snail's pace" (S3-1). S3-1's opinion was that when it comes to pedagogy and teaching, "the institution needs to take a more collaborative journey with me."

The research participants raised the issue of time concerning the one the academic semester that was provided to learn the model. Research participants indicated that time required for learning differed between research participants and one academic semester may be insufficient time to fully engage with the model for some research participants.

The findings from the stage 3 trials were vetted with the Research Committee. After the attainment of approval from the Committee, the participant information package was modified based on the research participants' suggestions. The number of theories in the participant information package was reduced to two--complexity theory and contingency theory. These two theories of change were selected because they were in the initial grouping of theories presented in the package and were prevalent in postindustrial literature. In addition, the term curriculum was removed from the package, and the example of the model offered in the package was advanced. An amended participant information package was created and presented as the refined package offered in Chapter 5.

4.8 Conclusions

The Research Problem was: *In what way(s) and to what extent can University instructors incorporate theories of change in their pedagogical practices through the application of a conceptual framework?* To address this problem, a model was developed. The concept for the model was that characteristics from contemporary theories of change could be infused into pedagogy. The concept placed the characteristics from theories of change as organizing principles that framed instructional practice. The aim of the pedagogical infusion process in the model was to guide instructors to create a context or an environment of change within the classroom that would simulate real-world change occurring outside the classroom.

Research findings were generated from a survey at an international conference and three stages of research trials. The conclusions on the findings were presented as they related to the Research Questions.

4.8.1 Conclusions for Research Question 2(a)

Conclusions on the findings were revealed for Research Question 2(a): *What meanings and interpretations do the research participants give to the Change Infusion Model concepts?* The presentation of the model at an international conference revealed one respondent thought that the model was unnecessary. Importantly, six of the seven respondents indicated an overall personal interest in the change infusion model. One respondent stated an interest in utilizing the model starting in the next term and requested that the conference proceedings be sent directly to them as quickly as possible.

The 3-staged trials provided findings on the interpreted meaning of the model. To begin, the features of the theoretical framework of the CIM surfaced from analyses of authoritative literature and research. The preliminary model was presented in Chapter 2. The three stages of research trials used to refine the model revealed that research participants accepted the idea of adapting

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pedagogy for the times. In addition, negative comments were not revealed and this was interpreted to mean that the research participants accepted the concept promoted by the CIM for adapting pedagogy by infusing characteristics from theories of change. Also, no comments were revealed that indicated a negative response concerning the theoretical framework of the model. This was interpreted to mean that the research participants accepted the selected CIM theoretical framework that included Gay's infusion process, a cognitive-constructivist perspective, and multiple conclusions from the authoritative literature to frame the steps in the model.

The stage 1 trial research participants revealed an understanding of the model as a teaching strategy instead of a pedagogical strategy. After the introduction of a collaborative meeting method that aided learning the model, the stage 2 and 3 trial research participants interpreted the model as a pedagogical strategy.

The 3-staged trials provided a response on the satisfaction/dissatisfaction level with the model with the use of a Likert scale of opinion. The stage 1, 2, and 3 research participants ranked their satisfaction level with the CIM as: 1 ranking at *strongly satisfied*, 6 at *satisfied*, and 2 at *undecided.* No *dissatisfied* or *strongly dissatisfied* rankings were received throughout the trials. Overall, the majority of the research participants rated the CIM at either the *strongly satisfied* or *satisfied* levels. It was noted that a *satisfied* ranking was obtained by all of the stage 1 trial research participants that understood the model as a teaching strategy, and not a pedagogical strategy. It was revealed that one *undecided* participant indicated time pressures were a factor that affected their learning the model. The other *undecided* participant revealed that the combination of the elements in the theoretical framework in combination made the model too complex.

In the stage 3 trials, research participants also rated their level of ability to use the CIM in practice on a Likert scale. All stage 3 research participants

responded that their ability to use the CIM was at a level of 4 or *satisfied*. A response of *satisfied* with their level of ability to use the CIM in practice was provided by the stage 3 participant that was *undecided* concerning the satisfaction level with the CIM due to the complexity of the model.

The majority of research participants provided supportive descriptors concerning the model. Examples included that the model was "valuable" (S1-3), "an excellent model" (S1-2), "helpful" (S2-1), "enlightening" (S3-3), a "wonderful process" (S1-3), and "user friendly" (S2-1). Overall, descriptors offered were interpreted to mean that research participants generally accepted the concept of the model to infuse change within pedagogy.

The findings revealed that the research participants interpreted the term "change" in a variety of ways. The interpretations included: (a) change as represented by an increased workload when one adapted pedagogy, (b) change in terms of the need for institutional structural support during change, (c) change in terms of language used to represent terms, (d) change as stepping outside of one's boundaries of practice, and (e) change as transformative learning. Change was interpreted in a number of ways throughout the trials.

Research participants also revealed an interpretation of change that indicated one could not be forced to change. In addition, research participants indicated that a willing instructor might not be able to translate change knowledge into practice. Thus, an instructor willing to implement constructed knowledge to change pedagogy for the times may not be able to do so. Thus, all instructors might not be in a state of readiness for an awareness or orientation for implementing the CIM.

The pervasive nature of change impacted the CIM itself. Research participants suggested that all instructors should not be expected to access the CIM in the same manner. Changing needs between research participants must be accounted

for in the CIM process. Thus, options must be instituted in the design of the CIM to allow flexibility when using the model. The research participants suggested this adaptation be completed with the movement of the CIM steps from a linear listing to a circle format.

Research participants revealed a concern about the time allotted to learn the model during the trials. A time constraint of one academic semester to engage with the model was interpreted as an issue for some trial research participants. Some research participants indicated the need for more time to learn the CIM. Research participants suggested that time necessary to learn the model varied and was based on the needs of the individual participant. The amount of time a particular participant required to learn the model might impact the meanings and interpretations of the CIM concepts.

Overall, the responses offered by the conference survey respondents and research participants that engaged with the CIM were generally accepting of the premise of the model to adapt pedagogy for the times. The research trials used a Likert scale of opinion and produced a judgement on the model and the majority of research participants rated their level of satisfaction with the model as *very satisfied* or *satisfied.* There were two research participants that provided an *undecided* ranking and no *dissatisfied* or *very dissatisfied* opinions were received. Descriptors offered during the trials supported an interpretation that the research participants accepted the concept of the model to infuse theories of change within pedagogy. However, arising issues during the engagement with the model suggested the preliminary model be refined to include a movement of the linear steps to a circular form to account for change and flexibility when using the model. In addition, the term change was interpreted in a variety of manners. This indicated change when rethinking pedagogy included multiple realities, including a different amount of time to learn the model based on individual needs.

4.8.2 Conclusions for Research Question 2(b)

Conclusions on the findings were revealed for Research Question 2(b): *How do the research participants conceptualize their pedagogy at different stages of the trials?*

The collaborative discourse afforded a glimpse of the practical theories or pedagogy of the research participants. Pedagogy revealed included:

- Offering an element of dimension to the course by tying everything together,
- Linking theories and concepts to one's life experiences in order to provide a practical connection between theory and practice,
- Allowing assignments to be adapted to suit the needs of individual students or a particular group,
- Using the concept of "unfolding assignments" whereby successive drafts on the same topic are completed, each applying new principles outlined as the course advances,
- Using a variety of group activities–including feedback groups and rotating groups,
- Working to use language as an important element which can affect understanding,
- Understanding that life is complex and flexibility is required because of that complexity,
- Complexity and contingency go hand-in-hand. There are high structural needs to support complexity and contingency options to avoid unfamiliar and out-of-control situations,
- Consciously moving beyond only covering the course content, which may require one to step outside their comfort zone,
- Understand that what worked well with one group may not work with another group--how one teaches depends on the audience,

- Observing and getting constant feedback from body language, interaction, and noise level and then changing to meet the needs as one proceeds, and

- If there is an expectation for the learners to use different models, then the instructor must model them in order for the learners to be able to do so.

An engagement with the CIM provided insights into some of the research participants' practical theories or pedagogy. However, the research participants did not indicate a full understanding of their pedagogy/practical theories and a full overview of pedagogy was not revealed. The practical theories expressed by research participants were interpreted to not conflict with the concept of infusing change within pedagogy. However, these expressed practical theories did not reveal how change would or could be infused in the future or how they changed their pedagogy due to the engagement with the CIM.

4.8.3 Conclusions for Research Question 2(c)

Conclusions on the findings were revealed for Research Question 2(c): *What are the reported impacts of the Change Infusion Model on the pedagogical approaches of the research participants?*

The findings revealed that the CIM did not illustrate the capacity to guide all instructors to a pedagogical strategy for contemporary times. The stage 1 research participants indicated an understanding of the model as a teaching strategy.

The stage 2 and 3 research participants revealed an understanding of the model as a pedagogical strategy with the use of a collaborative meeting method. Thus, a communication vehicle within the model process was necessary to ensure an understanding of the model as a pedagogical strategy.

The findings illustrated the capacity of the Gay (1995) infusion-based model generated an awareness and understanding of the model that promoted the concept of infusing theories of change within pedagogy. However, the capacity of the model to guide all research participants to infuse contemporary change within practice was not revealed.

An orientation to infuse characteristics from theories of change in practice was revealed by two stage 3 research participants; however a change in future pedagogy was not revealed. The two stage 3 research participants incorporated change within pedagogy with one learning strategy during the trials. These research participants indicated that they might use the model in practice in the future. S3-2 stated that the model "certainly made me look at the way I do things," and "I guess we embrace it in such a way now that it just becomes part of our routine." While, S3-3 stated, "this concept has for me now moved the subconscious to the conscious. As such, I will continue to embrace 'change' and ways to incorporate it in my pedagogy." The third participant was undecided concerning the model's use because they had not completely determined its overall effectiveness for use in their practice. Although, some research participants stated an orientation to utilize the model in practice; the actual use in practice was an unknown.

Arising issues that impacted the CIM in practice included tensions and paradoxes. Tensions arose due to pressures on an instructor's available time, workload, the support needed from the institution when one used a change model, and one's comfort level for change. There was a general agreement that educational practice needed to be emergent; however, it was revealed that tensions stemmed from emergent practice. Research participants indicated that being adventurous with pedagogical change was potentially career limiting, especially for untenured faculty. One needed a personal comfort level for the risk of adapting pedagogy that had a direct bearing on one's academic work life.

Several paradoxes revealed as the research participants engaged with the CIM. One paradox involved determining the questions to ask when rethinking pedagogy without knowing if the correct questions were posed. Another paradox involved negotiating the correct amount of infusion when using the CIM when a correct amount was an unknown. An additional paradox was that one could adapt pedagogy for the times, but the correct pedagogy was an unknown. The paradoxes revealed the process of pedagogical adaptation for the times was conducted when the correct strategies, directions, and results were unknown.

The revelation of the impediments indicated that adapting pedagogically was not an easy task. The impediments meant that philosophically an instructor could have a conscious awareness of the CIM and agree that pedagogy needed to be adapted for the times. Yet, the instructor may be unable to adapt pedagogy due to the tensions and paradoxes. The practical implications of the tensions and paradoxes made the adaptation of pedagogy difficult as one needed to have a comfort level for working through the impediments to adapt pedagogy.

Research participants indicated that a practical implementation strategy for the CIM was a phased-in method. Due to the tensions and paradoxes, the model was not seen as practical to underscore all of one's instructional and learning strategies. However, the model was conceivably practical for use by incrementally phasing in the options for a pedagogy informed by change.

Trial research participants revealed a general agreement that educational practice should be emergent. However, emergent pedagogical practice was deemed a difficult state to achieve and maintain due to the tensions and paradoxes that arose with change. In spite of the difficulties, research participants indicated that one should strive to keep pedagogy emergent.

4.8.4 Conclusions for Research Question 2

Conclusions on the findings were revealed for Research Question 2: *What is the efficacy of a Change Infusion Model in enabling a cohort of professionals to frame their instructional and learning strategies in a context of contemporary change?*

The stage 1 research participants indicated that they did not fully understand the concept of infusing pedagogy with characteristics of theories of change. Stage 1 research participants understood the CIM as a teaching strategy about change. Yet, the stage 1 research participants deemed the model to be a valuable tool. However, the model lacked the efficacy to move research participants in the stage 1 trials to an awareness and orientation of the CIM as a pedagogical strategy for contemporary times.

The stage 2 and 3 trials were conducted with the use of a collaborative discourse method. The stage 2 and 3 research participants felt the collaborative meetings were valuable for learning the CIM and offered descriptors that the meetings were "most useful" (S2-1), provided "great idea exchanges within the conversations" (S2-1) and acted as a "springboard from which to generate my own ideas and opinion" (S3-2). After the inclusion of a collaborative meeting method, the CIM exhibited the efficacy to guide the research participants to develop an awareness of the model as a pedagogical strategy.

The efficacy of the model guided the stage 2 and 3 research participants to an awareness and understanding of the model as a pedagogical strategy. However, the efficacy of the CIM to guide instructors to frame their instructional and learning strategies in a context of contemporary change was not fully revealed in this inquiry.

The model guided the stage 2 and 3 research participants to develop an awareness and understanding of the concept of infusing change within pedagogy. Two of the stage 3 research participants infused change within

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pedagogy for use with one learning strategy during the trials. In addition, a stated orientation to utilize the model in the future was revealed by some research participants. However, the time needed to change course descriptions and implement change within pedagogy was not available at this stage of the inquiry. The efficacy to infuse theories of change within pedagogy in future practice was not revealed.

Overall, the stage 1 research participants presented an understanding of the CIM as a teaching strategy about change, not a pedagogical strategy. Yet this group of research participants interpreted the model as a valuable tool. The efficacy of the model improved in the stage 2 and 3 trials that were conducted with the addition of a collaborative discourse method. With collaboration, the stage 2 and 3 trial research participants developed awareness for infusing key characteristics from contemporary theories of change into pedagogy for practical use. The stage 2 and 3 research participants felt the CIM was now in their consciousness and was generally acceptable for practical use by some of the research participants. Two research participants infused change within pedagogy during the trials; however, future use of the model in practice is unknown.

4.8.5 Conclusions for Research Question 3

Conclusions on the findings were revealed for Research Question 3: *What are the features of a refined framework for pedagogy for contemporary postindustrial change that emerge from the field research?*

A preliminary CIM was designed with the use of analyses of authoritative literature. During the three stages of research trials, refinements were suggested for the model and for the participant information package that outlined the model.

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Refinements to the model were suggested and included the placement of the model steps into a circular process. The circular process was interpreted as being open to options when research participants accessed the model. Thus, the model itself needed to be open to change. With the use of a circular process, once research participants had learned the model, they were able to enter the CIM at any point within either model.

Overall, the trial research participants supported the participant information package format utilized to present the details on the CIM; however, suggested refinements were offered. The stage 1 research participants suggested: (a) the addition of summary page on the steps within the CIM to aid research participants learning the model, (b) the addition of graphics that represented each of the five CIM steps to aid research participants to remember the steps, (c) the augmentation of the information provided for step 2 in the CIM concerning a "flexibility effect," to the plural form, and (d) the addition of information on dissipative structures in the explanation of complexity theory to further illustrate complexity.

The stage 2 research participants suggested refinements to the participant information package. The suggestions included: (a) adapting the language to remove the term "the" prior to the terms used in order to be open for emergent knowledge, (b) adapting the discussion on the description of the cognitive-constructive situation to reveal a ratio between the terms, (c) consideration for changing the timing of the distribution of the participant information package, and (d) expanding the example or scenario and adding a brief outline of the model.

The stage 3 research participants suggested refinements to the participant information package. The suggestions included (a) adaptations in the language utilized to remove the term curriculum as it was being confused with the course curriculum, (b) the consideration of changing the timing of the distribution of

material to be as needed and not all at once at the beginning of the trials and (c) adapting the number of theories to be offered when initially learning the model from five down to three theories.

The interpretations of the field research findings are discussed in Chapter 5.

CHAPTER 5: INTERPRETATIONS OF THE FIELD RESEARCH FINDINGS

5.1 Introduction

This doctoral dissertation investigation concerns viable directions for a pedagogical response to contemporary postindustrial times. The Research Problem is: *In what way(s) and to what extent can University instructors incorporate theories of change in their pedagogical practices through the application of a conceptual framework?* To address the research problem, a model guides instructors in rethinking pedagogy to adapt for contemporary postindustrial change-based times.

This chapter presents a discussion on research participants' interpretations and reflections concerning the CIM. The discussion presents the interpretations and reflections as they relate to Research Questions 1, 2(a), 2(b), 2(c), 2, and 3. This discussion includes interpretations and reflections on (a) the context and aim of the model, (b) the theoretical framework of the CIM, (c) the steps in the model, (d) the use of theories of change with the model, and (e) the sociocultural-historical influence from users of the model. The preliminary CIM is refined using the interpretations and reflections from the research trials. The end of the chapter presents a refined CIM and participant information package.

The discussion utilizes a constructivist interpretation of the data. Primary data from the stage 1, 2, and 3 guided records are in Appendix B and allow additional readers to discover personal meaning from the data and to compare their conclusions with those offered in this chapter. According to Patton (2002), a constructivist perspective is open to differing conclusions among readers.

5.2 Interpretations on Research Question 1:
What are the features of a theoretical framework for adapting pedagogy to postindustrial change that surface from analyses of authoritative literature and research?

To answer Research Question 1, analyses of authoritative literature establish a context and the theoretical framework for a preliminary CIM. Research participants' interpretations and reflections on the context and features that frame the model are below.

5.2.1   Reflections -- The Preliminary CIM Context and Aim

Contemporary times include a context of contemporary change (Bell, 1973; Zuboff, 1988). Contemporary change is permeating (Homer-Dixon, 2001), occurring at a faster rate than at any other time in the history of the world, and will continue for decades into the future (Modis, 2003). Postindustrial change includes an environment of complexity and unpredictability (Choo & Bontis, 2002; Kozlowski, Brown, Weissbein, Cannon-Bowers, & Salas, 2000). Chapter 2 illustrates the advance in the authoritative literature on theories of change, theories of organizational change, and theories of educational change. The literature suggests that individuals have a "life space" (Lewin, 1951) that includes multiple forces. Within this "life space," individuals adapt to change with a 3-phase process of actions (Lewin, 1951). Bennis, Benne, and Chin (1985) suggest enticements encourage individuals to change. Schön (1973) reveals that there is a natural tendency for some individuals to resist change.

Design experiments are a means for educators to respond to the challenge of change and complexity as "test-beds" and "cycles of invention and revision" (Cobb diSessa, Lehrer, & Schauble, 2003, p. 10). Design experiments include reflections that, in this inquiry, aid professional development in the area of pedagogy.

A Change Infusion Model (CIM) aims to guide instructors to rethink pedagogy for contemporary change-based times. The model, from analyses of literature, guided instructors to an awareness of contemporary change and an orientation for infusing key characteristics from contemporary theories of change into pedagogy for practical use. The model promotes that key characteristics from theories of change, for infusion within pedagogy, could be organizing principles that frame instructional practice. Framing one's instructional practice (including instructional and learning strategies) with key characteristics of change creates a context of contemporary change within practice. The creation of a context of contemporary change is a means to foster understandings and insights for instructional practice and life in postindustrial times.

The three stages of research trials reveal an interpretation that the research participants accept the idea of emergent practice and adapting pedagogy with the use of theories of change in pedagogy. However, emergent pedagogical practice is a difficult state to achieve and maintain.

Interpretations of the findings reveal that pedagogy is difficult to keep in a state of emergence due to workload issues. One participant, S2-2, states that "we talk as if this emergence is part of our practice--it's supposed to involve emergent ideas but doesn't always." An underlying stream of thought is that educators that remain open and adapt for the times generate additional work when utilizing emergent knowledge. Research participants indicate that the work of the pedagogical designer [the instructor] "goes up exponentially due to high structure needs due to the options available in changing designs" (S2-1). Thus, if an educator aims to maintain an emergent pedagogy for contemporary times, one's workload increases.

Regardless of the workload, the research participants reveal that an emergent pedagogy has value. However, maintaining an emergent pedagogy in practice is not sustainable on a consistent basis. This constraint is due to the workload

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issues and the confines of time that influence emergent practice. Research participants indicate instructors are not always able to find the time to design and incorporate emerging pedagogical options. Instructors need to continue to develop options to remain in an adaptive mode for contemporary times; yet, juggling one's academic workload is a struggle. An emergent pedagogy is one element within the struggle.

5.2.2 Reflections -- Research Question 1 -- The Preliminary CIM Theoretical Framework

Reflections on the preliminary model relate to Research Question 1: *What are the features of a theoretical framework for adapting pedagogy to postindustrial change that surface from analyses of authoritative literature and research?* The theoretical design that arises from analyzes of literature include (a) Gay's framework for infusion, (b) a cognitive-constructivist perspective in the model framework, (c) steps in the model framework, (d) the use of differentiation with regards to theories of change with the model and, (e) a sociocultural-historical influence from users of the model. Each of these theoretical design elements is in the discussion below.

5.2.2.1 Reflections -- Gay's Framework in the Model

Gay (1995) suggests reducing the gap between theory and practice by infusing theory within one's educational practice. The objective of infusion is to intertwine theoretical advancements within practice to encourage the construction of pedagogical options for contemporary realities of change. The structural framework of the CIM follows an adaptation of Gay's work on infusion.

Gay's first stage, *inclusion,* requires the presentation of relevant facts, the time to frame the topic, and the development of a fundamental understanding of the topic. The inclusion stage in the CIM provides instructors with an opportunity to learn about the concept of infusing key characteristics from theories of change within pedagogy. This stage provides a foundational starting place for

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the CIM. This initial stage allows instructors that were not familiar with contemporary change and the CIM to have time to obtain a foundational level of understanding and agreement for adapting pedagogy for contemporary times.

Gay's second stage, *infusion*, requires the incorporation of the topic of contemporary change with one's higher education course content. This stage offers as an opportunity to engage with theories of change that allow the instructor to develop an awareness and understanding of the theories.

Upon reflection, Gay's use of the term "infusion" for the second stage of a four-stage infusion process is problematic. An instructor that utilizes this step could interpret the completion of infusion after this second stage. Research participants with this belief would not move beyond a strategy to teach the theories of change. The research participants would not move to the pedagogical strategy as the design of the model aims to encourage. This confusion means the stage 1 research participants fail to move beyond a teaching strategy. The researcher and Research Committee determine that additional methods are necessary to aid understandings of the pedagogical strategy. The addition of a collaborative discourse meeting method is made to the stage 2 and 3 trials, and consequently, the research participants reveal an understanding of the model as a pedagogical strategy. Collaborative discourse works well as the communication process to ensure research participants understand the infusion stage is not the end of the CIM process.

Gay's third stage of infusion is *deconstruction*, and in the CIM this includes breaking down theories of change for examination. The examination leads research participants to select characteristics for adapting pedagogy. The examination component is constructivist in nature and inherently dependent on personal abilities to deconstruct the theories. An ability to complete a deconstruction is dependent upon one's understanding of the requirements and an ability to deconstruct the theories of change. The model requires one to

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complete the deconstruction with a self-developed strategy for completing the activity. Upon reflection, a determination is made that those in a state of readiness to deconstruct perform better than those not in a state of readiness.

Gay's fourth and final stage is *transformation.* In the CIM, the transformation stage develops conclusions on the use of theories of change for pedagogical practice. An interpretation of this stage is that time and ability are important factors. The transformation of pedagogy is a multi-stage activity that needs time to incorporate pedagogical options within practice. This includes the time to create options and then manage the options. The management includes elements such as adapting the course syllabus to reflect the pedagogical transformation and training the teaching assistants. An interpretation is that those in a state of readiness to manage the elements for transforming pedagogy perform better than those not in a state of readiness. Due to the transformation requirements, the CIM is not for use when a course is in progress or to frame all of one's instructional and learning strategies at once (S2-1; S2-2). A phased-in implementation method is a realistic method for the use of the CIM.

The overall concept of infusing change within pedagogy to reduce the gap between theory and practice follows Gay's (1995) research. The use of Gay's stages of infusion provides a foundation from which the model guides instructors to infuse theories of change within pedagogy. The trial research participants did not raise negative comments that concern the use of Gay's infusion process in the model. This is a sign of accepting the concept of infusion in the model. However, three issues arise from the stages by Gay in the CIM. The first issue is that the second stage of the infusion process has the name infusion. The name of this stage is confusing as research participants could interpret that the overall infusion process is complete at this point in the model. To aid learning the complete infusion process, a communication strategy is necessary for use with the model. The second issue is that adapting pedagogy is a time-consuming process. The third issue concerns the reality of

constructing one's knowledge. Research participants may not have a readiness to construct, and the CIM steps inherently rely upon this readiness. This important state of readiness is in the discussion again later in this chapter.

5.2.2.2 Reflections – The Cognitive-Constructive Perspective In the Model Framework

The theoretical framework for the model utilizes a cognitive-constructivist perspective. The selection of this guiding theoretical framework follows authoritative literature and the combination of the two perspectives encourages consistency in action and the construction of knowledge. A cognitive-constructivist perspective is in the model steps.

The CIM design includes three initial steps that are cognitive in nature and provide a prescription of what to do and encourage a consistent outcome. Next, two steps encourage research participants to rethink pedagogy and the outcomes are not to be consistent. The CIM includes three cognitive steps and two constructivist steps—a ratio of 3-2.

The three cognitive steps in the CIM provide a prescriptive method. This method provides preset elements and encourages research participants to complete the elements or tasks consistently. The cognitive steps guide research participants to learn about change. This knowledge is foundational to the construction of a pedagogical response to contemporary change.

Two CIM constructivist steps encourage a pedagogical response for change. The strengths of the constructivist perspective in the model follow Schuman's (1996) position and include the ability (a) to interpret multiple realities, (b) to deal with real life situations, (c) to learn to problem solve, and (d) to learn to apply knowledge to novel situations (Schuman, 1996). The constructive premise is within the CIM and encourages research participants to explore and apply knowledge in an effort to reconstruct pedagogy in response to postindustrial times. The constructivist methodology encourages the

development of knowledge (Cuttance, 2001). This knowledge development includes a foundation of "personal interpretation*(s)* of his or her experiences" (Merrill, 1991, p. 46).

The use of constructivist methodology in the CIM decreases the consistency of the research participants' response due to the acceptance of multiple realities. This creates a challenge for instructors. The instructors are left to construct knowledge to determine how to apply theoretical characteristics within their personal pedagogy, and to determine if they have the correct pedagogical result. The CIM is dependent upon the instructors and their readiness for the constructive process. This readiness affects the ability to use the model.

There are no standards in the literature to measure the correctness when constructing knowledge concerning adapting pedagogy for contemporary times. In addition, knowledge utilizing constructivism is in a constant state of flux as learners continuously analyze, adjust, and create conclusions (Brockbank & McGill, 2003). The knowledge development is never in a state of completion with predicable outcomes. Thus, for this study, it seems reasonable to have more prescriptive guidance (cognitive) than interpretative focus (constructive). However, the 3-2 ratio may be incorrect to guide research participants to a pedagogical strategy. This ratio is consistent for the entire course of this research study, but future research may need to specifically examine the ratio between the two theoretical orientations.

5.2.2.3 Reflections -- Steps in the Model Framework

The framework of the model steps comes from conclusions in the authoritative literature. Step 1 includes Lewin's (1951) conclusion that an educator had a "life space" and that there are forces within this space. The researcher considers a "life space" includes contemporary change. In actuality, multiple forces in an educators "life space" entangle change with other forces found in one's academic work life. Upon reflection, these forces are seen as extending to all

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five CIM steps. The positioning of Step 1 of the CIM is at the bottom of the model and this position indicates that the step provides a structural foundation for all of the other steps. This extension to the other steps is not previously fully understood during the design phase of the preliminary model. However, the position of the step at the base of the model is correct to provide the foundational structure for designing pedagogy within an educator's "life space" of change.

Step 1 framework also exhibits Senge's (1990) conclusion that the design is the key influence within pedagogy. Upon reflection, this conclusion appropriately positions the individual educator as the primary driver of adapting pedagogy for contemporary times.

The basis of the second step in the CIM includes a conclusion that one's personal opinions or stance impacts one's learning context and practice (Brockbank & McGill, 2003; Salmon, 1989). A personal stance, or one's "flexibility effect" (Conner & Prahalad, 2002, p. 105) encourages personal perspectives, opinions, approaches, ideas, and options for the development of pedagogy for postindustrial times. Research participants in the inquiry did not refute the advantage of personalization of practice.

Step 3 encourages research participants to engage with theories of change to learn their key characteristics. The research literature fails to provide a starting point for learning about contemporary theories of change. The choice of a starting point for this inquiry is one's personal development of an understanding of contemporary theories of change. This starting point is not an issue for the research participants. The lack of negative comments by research participants indicates acceptance of the step.

The framework in the fourth and fifth steps in the model includes a constructivist perspective. Constructivism encourages learners to construct

meaning (Slattery, 1995) with "interpretive understandings, or meaning with special attention to [the] context" (Patton, 2002, p. 114). This step follows Nicholl's (2001) conclusion that "academics engage with the evidence and… reflect …in such a way as to improve practice" (p. 12). In the CIM, the constructivist steps encourage a rethinking of pedagogy by exploring and applying key characteristics from theories of change. Reflection is the means to advance learning (Peters, 1987). The CIM follows Symes and McIntryre's (2000) work that promotes reflection with a process of 'self-directed' questions.

An application of Chin and Benne's (1969) categories of change frame the constructivist component of the model and encourage educators to question in order to act independently as reflective pedagogical designers. Yet, according to the research participants, educators can also be interdependent in order to meet the requirements of the educational system. This independent-interdependent relationship is rife with influences, paradoxes, and tensions. Overall, the theoretical framework for the preliminary CIM is from analyses of the authoritative literature. The steps in the model are acceptable by the research participants in the inquiry. This interpretation is due to the lack of negative comments from research participants. However, the research participants reveal that the term "flexibility effect" in step 2 of the CIM needs to be plural. This change is acceptable by the Research Committee. In addition, the 3:2 cognitive-constructivist elements in the model are a ratio. However, no guidelines are available to confirm the correctness of the 3:2 ratio in the model. The Research Committee accepts the change in the terminology to use a ratio in the description of the model. The 3:2 ratio is consistent during all of the trials. Finally, the desire to adapt pedagogy for the times in a context that imposes the educational system is a stimulus for paradoxes and tensions. Each influence and tension is under Research Question 2(c) later in this chapter.

5.2.2.4 Reflections -- Differentiated Theories and the Model

The model allows instructors to personally select theories of change for use with the model and there is no one correct theory of change (Hatch, 1998). The criterion for selecting a theory of change for use in the CIM is that it is "currently believed to be actually happening and the trend will shape the future environment" (Zack, 2002, p. 260).

The utilization of different theories of change alters the key characteristics for infusion and is an advantage due to the potential for creating various perspectives. Combining different perspectives is advantageous (Bolman & Deal, 1991; Kezar, 2001; Morgan, 1986; Van de Ven & Poole, 1988). Designing the model for the individual selection of theories keeps the model open for the nature of change.

The preliminary participant information package offers five theories of change. The research participants deem the five theories as too many when initially learning the model. There are too many theories and key characteristics to consider. The participant information package in this Chapter presents two theories -- complexity theory and contingency theory. These two theories provide a starting point for learning the model. Both of these theories are in the authoritative change literature in abundance. These theories are not to constrain the selection of other theories for use with the CIM. The research participants deem the number of theories at two is manageable.

5.2.2.5 Reflections -- Underlying Influences on the Model

The CIM participants' influence includes their sociocultural-historical background. This background includes one's values, practices, and orientations that produce internal influences on one's logic and power (Collier, 1994; Harvey, 1996). Hampton-Turner and Trompenaars (1997) indicate that the sociocultural influences affect the use of societal models. Examples of this influence are in the research trials.

Two examples are in the collaborative discourse. S2-3 states, "I believe that the change infusion model is representative of the change that society and culture is going through at this present time." This participant relates the model to what they believe is currently occurring within society. Another example is:

> The sheer complexity of each component makes it somewhat overwhelming to put them all together in a model. Each component is a model in and of itself (S2-2).

This perspective on the model is in part due to the sociocultural influence, or experience that concerns complexity when constructing knowledge.

Research participants do not declare their historical, social, or cultural background for this research. During the trials, none of the research participants indicate that their sociocultural-historical background influences them in such a way as to not agree with the premise of adapting pedagogy for posindustrial times. However, existing literature suggests that the foundations of one's culture influences learning (Hofstede, 1984). The learning may act as a sociocultural-historical conduit of influence and affect opinions concerning the CIM. This influence is not transparent in this inquiry.

5.2.3 Research Question 1 -- Conclusions

Research Question 1 is: *What are the features of a theoretical framework for adapting pedagogy to postindustrial change that surface from analyses of authoritative literature and research?* The theoretical framework that surfaces from the analyses includes Gay's infusion process, a cognitive-constructivist model that includes a series of steps, and the use of key characteristics from contemporary theories of change. Overall, the reflective conclusions from the 3-stage trials deem the theoretical framework of the model to be appropriate for practical use—with a collaborative discourse method and phased-in implementation. The model design establishes a means to guide practitioners to form a pedagogical response to postindustrial change. However, an interpretation is that an emergent pedagogy requires a readiness to transform pedagogy and increases an academic's workload.

5.3   Interpretations --Research Question 2(a):
What Meanings and Interpretations do the Research Participants give to
the Change Infusion Model Concepts?

The use of a survey of attendees at an international conference presentation and
from research participants in three stages of research trials offers reflections on
the CIM. Interpretations and meanings constructs on the CIM are around core
concepts from the data and include (a) the conference survey, (b) the research
trials Likert scale of opinion, (c) descriptors on the CIM, (d) the concept of time
when adapting pedagogy, (e) change in the model, and (f) the CIM steps. An
outline of each concept is in the discussion below.

5.3.1 Interpretations --The Conference Survey

A survey of attendees at a presentation on the Change Infusion Model at the
Tenth International Literacy and Education Research Network Conference July
17, 2003 provides initial feedback on the viability of the concept for a CIM.
Seven of the 10 people in attendance at the presentation submit survey
responses.

The survey indicates that a majority, six of seven respondents, feel the
condition of change is important and needs to be infused within pedagogy,
learning strategies, and/or instruction. However, the respondents do not offer a
consensus on the current change infusion situation within their educational
institutions. Three respondents report that instructors in their particular
institution currently infuse the condition of change, while three respondents
report that change infusion is not at their institutions. Thus, the infusion of
change is not consistent in the representation of data from the conference
survey respondents. In addition, 5 respondents state that a system of structure
or model is not available to assist the infusion process. One respondent
believes the model is unnecessary. Importantly, six of the seven respondents
indicate an overall personal interest in the change infusion model. In particular,
one respondent has an interest in the model for use starting immediately and

requests that the conference proceedings be sent directly to them as quickly as possible.

Overall, the Tenth International Literacy and Education Research Network Conference presentation on *Rethinking pedagogy for the times: Advocating a change infusion model* receives positive feedback. The response from the research participants regarding the model indicates the concept of a model for adapting pedagogy for change-based times has potential, although not for all instructors. The response provides the researcher with the general opinion that the research has merit. The feedback encourages the researcher to continue the work on the CIM.

5.3.2 Interpretations – Research Trials -- Descriptors on the CIM

Research participants interpret the CIM as acceptable for use and provide supportive descriptors concerning the model. The descriptors on the CIM include: "valuable" (S1-3), "an excellent model" (S1-2), "helpful" (S2-1), "enlightening" (S3-3), a "wonderful process" (S1-3), and "user friendly" (S2-1). Participant S1-2 states that the CIM is "an excellent model that should be endorsed by the educational system around Canada." One undecided participant indicates that the CIM concept is "a valid and thought-provoking one" (S3-2). Overall, descriptors express research participants' satisfaction with the model.

5.3.3 Interpretations – Research Trials -- The Likert Scale Opinion

The research guided records provides a Likert scale of opinion that relate to the meaning and interpretations the research participants give to the CIM concepts. The research participants rank their level of satisfaction or dissatisfaction with the CIM. The scale offers five categories from 1 (*strongly dissatisfied*) to 5 (*strongly satisfied*). Overall, the rankings in the stage 1, 2, and 3 trials include one ranking at *strongly satisfied* level, 6 at *satisfied*, and 2 at *undecided*. Participants offer no rankings of 1-*dissatisfied* or 2-*strongly dissatisfied*. Overall, 7 of the 9 research participants rate their opinion of the CIM at either

5-*strongly satisfied* or 4-*satisfied* levels. The Likert scale response indicates that there is general support for the CIM to pedagogically adapt for change-based times and the model design.

Two research participants (1 from each of the stage 2 and 3 trials) indicate an *undecided* level of satisfaction with the model. One *undecided* participant, S2-2, states that the "sheer complexity of each component makes it somewhat overwhelming to put them [the stages] all together in a model. Each component [or step] is a model in and of itself." This participant determines that the CIM is too complex. An interpretation by the researcher is that learning theories of change and the constructivist exploration and application of the key characteristics to pedagogy is too complex for some instructors. This participant may need additional cognitive steps to break each of the steps down into smaller segments for use. The participant may believe the model is too complex no matter how many CIM steps there are. This participant may construct knowledge in such a manner that they perceive all elements that impact the model. The elements, including tensions and paradoxes, lead to the complexity of the model. The other *undecided* participant, S3-2, states that the implementation of a new course during their introduction to the CIM compromises their ability concerning the CIM. An interpretation is that an instructor's place in time influences the use of the CIM because one's time impacts emergent practice.

In the stage 3 trials, research participants provide their level of ability to use the CIM in practice. A Likert scale of opinion with five categories 5-*strongly satisfied* to 1-*strongly dissatisfied* is available. All stage 3 research participants respond that their ability to use the CIM is at a level of 4-*satisfied,* including a response of *satisfied* with their level of ability to use the CIM in practice by S3-2, a participant that is *undecided* concerning the satisfaction level with the CIM. An interpretation of the response is that the instructors have the ability to infuse change within pedagogy. The only stage 3 *undecided* participants S3-2, is

satisfied with their ability to use the model in practice. Thus, the instructor has the ability to complete the model steps, but needs more time to determine if the model is useable in their practice.

Overall, the guided records indicate that the majority of research participants are satisfied with the CIM. In addition, the stage 3 research participants reveal general satisfaction with their ability to use the model in practice.

5.3.4 Interpretations – Research Trials – The Concept of Time When Adapting Pedagogy

A time constraint of one academic semester for engaging with the model occurs within the trials. The time is an issue for some trial research participants. S2-1, S2-2, and S3-2 indicate that like more time to learn the CIM. The amount of time to learn a model for rethinking pedagogy is an unknown. The literature offers no guidance concerning the correct number of academic semesters in which to learn a model in research trials. The time for research participants to develop their awareness and understanding of the model differs. S2-3's comment illustrates a time difference for learning the model: "it may take me longer to go through the process of the understanding of the material but it's coming through."

Time is an element that impacts the research participants' interpretations and meaning of the CIM concepts. The two research participants in the inquiry that indicate their level of satisfaction with the model is *3-undecided* reveal they want more time to learn the model.

After reflecting with the Research Committee, the trials continue to use a consistent timeframe for engaging with the model. A correct amount of time to alter the engagement for learning is an unknown. Maintaining a consistent time framework is appropriate for the trials. Altering the timeframe to a greater number of semesters (allowing for an expansion to the period of time in which to learn about the model and its use) may be utilized in future studies.

5.3.5 Interpretations – Research Trials -- Change in the Model

The findings reveal that the interpretation of the concept of the term "change" varies between research participants. In addition, the nature of change impacts the CIM.

The term "to change" describes to mean "to alter, make or become different" (HarperCollins, p. 64). However, a universal understanding of the term "change" and a consistent interpretation of the term by the research participants is not found. An interpretation of the term "change" is individual. Research participants illustrate the term change is available for use in a number of manners that include: (a) an increasing workload (b) the need for structural support for instructors, (c) technological advancements, (d) the language for terms, (e) stepping outside of one's current boundaries of practice, and (f) transformative learning. Thus, when rethinking pedagogy, the meaning of change is different among the research participants. The differentiated meanings are part of one's flexibility effects.

5.3.6 Interpretations – Research Trials -- The CIM Steps

An interpretation of the findings indicates that the nature of change impacts the model. The stage 2 research participants suggest that the pervasive nature of change in the model means that all instructors should not access the CIM in the same manner. The changing needs between research participants needs to in the design of the CIM.

To accommodate change in the design of the model, the research participants suggest the model steps be in a circle of steps. The researcher interprets the suggestion as two cycles – one for the cognitive steps (Steps 1-3) and another for the constructivist steps (Steps 4-5). Both the cognitive and constructivist cycles are continuous loops--without an end point.

The use of two cycles allows instructors to continuously develop knowledge for pedagogical application. Instructors are able to move freely from the cognitive cycle steps to the constructivist cycle steps and back many times. The two cycles are thus interactive. Learning in the cognitive cycle is portable and useful in the constructivist cycle. This CIM structural design change allows one to access either cycle at any time. The design of the model permits open access for the needs (including the changing needs) of the participant. The design allows manoeuvrability within each of the cycles--with the ability to use any step within a CIM cycle in an order chosen by the individual.

Overall, the collaborative discourse supports Homer-Dixon's (2001) research that change is permeating. Thus, change permeates and impacts the CIM. Adapting the design to two cycles of steps allows the model to remain open for differentiated access, manoeuvrability, and emergent use. The conclusion by Fullan (1993) that change is a process and not a single event with a conclusive beginning and end is foundational to the CIM.

5.4   Research Question 2(a) -- Conclusions

A survey at an international conference after a presentation of the CIM encourages the researcher to continue work on the model. Meanings and interpretations from the conference participants indicate a general acceptance of the CIM concept to infuse change within pedagogy. The research trials Likert scale of opinion produces a judgement on the model. The majority of research participants are *very satisfied* or *satisfied* with the model's concept. There are two research participants that are *undecided*. S3-2, an *undecided* participant, expresses that the model is too complex. However, this same participant is satisfied with their ability to use the model in practice. The other *undecided* participant indicates that the impact of time constraints affects their level of satisfaction with the model. There are no *dissatisfied* or *very dissatisfied* opinions. Descriptors from the research participants support an interpretation that research participants support the model concepts.

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Research participants interpret the term change in a variety of manners. This indicates one's meaning of change when rethinking pedagogy includes multiple realities. In addition, the nature of change is influential on the model itself. A suggestion is made (and approval is provided by the researcher and Research Committee) that the model allow options for change when using the model. The use of cycles (instead of a linear progression of steps) offers the opportunity to change the access point, time spent in each of the cognitive or constructive cycle of steps, and the timing for movement between the two cycles for personal needs. This adaptation means that the CIM is not exempt from an influence of change.

5.5   Interpretations on Research Question 2(b):
How Do the Research Participants Conceptualize Their Pedagogy at the Various Stages of the Trials?

5.5.1 Reflections -- Explicating Pedagogy

The authoritative literature indicates that the attainment of the expression of an individual's practical theories or tacit knowledge is a challenge (Fullan, 1999, 2001; McIntyre & Hagger, 1993; Nonaka & Takeuchi, 1995; Szulanski, 1996). Practical theories are the knowledge base for designing or governing one's pedagogy (Ritchie, 1998) and a key influence on what an instructor does in the classroom (Pajares, 1992). Yet, the literature indicates that many instructors are unaware of their tacit knowledge or practical theories. This lack of awareness presents a challenge when trying to adapt pedagogy for postindustrial times.

According to Schorr (1997), tacit knowledge is a type of "iceberg" (p. 29). Tacit knowledge is hard to access; however, it is valuable knowledge (Fisher et al., 2002). The value of the knowledge includes the production of "insight" (Leonard & Sensiper, 2002, p. 486). The CIM encourages a rethinking of pedagogy for postindustrial change. If one could not express the make-up of their pedagogy, could a rethinking process occur? How can one reflect on

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pedagogy if the elements within pedagogy are unknown? This answer to this key question is in the discussion below.

5.5.2 Pedagogy Explicated

The collaborative discourse affords a glimpse into the pedagogy or practical theories of the research participants. The examples of pedagogy by the research participants include:

- The provision of a link as an element that offers a dimension to the course to tie components together,
- A link between theories/concepts and life experiences that provides a practical connection between theory and practice,
- Assignments that suit the needs of individual students or a particular group,
- Successive assignment drafts on the same topic, each with the application of new principles,
- A variety of group activities including feedback groups and rotating groups,
- Language emphasizes an important element that aids understanding,
- The emphasis on life as complex and the provision of flexibility for that complexity,
- Structural needs for complexity require contingency options to avoid unfamiliar and out-of-control situations,
- The consciously movement beyond the course content that requires stepping outside one's comfort zone,
- Teaching to the particular audience,
- The obtainment of feedback from the observation of body language, interaction, and noise level and instruction moves for the particular needs as one proceeds, and
- The utilization of various models in practice to teach learners the concept that one must use various models.

An engagement with the CIM provides insights into some of the research participants' practical theories within pedagogy. Below are reflections on the pedagogy explicated.

5.5.3 Reflections on Pedagogy Explicated

Pedagogy from the research participants indicates the utilization of a variety of elements within practice. One element is the linking of concepts. Links advance understandings of the material as a whole and tie theories/concepts together with life experiences. A second pedagogical element indicates the use of reconfiguring assignments. The assignments include group and individual needs and the completion of multiple drafts. A third pedagogical element exposes the use of groups. Various groups and options include groups that rotate and groups specifically to obtain feedback. A fourth element is language. Language offers as a component within practice that can manipulate understandings. A fifth element concerns the conscious awareness and need to adapt to the particular environment. This includes an understanding that life is complex and the need for awareness of the class environments through regular feedback and observations. Adaptations to the particular environment include the use of flexibility to adapt to the audience. A sixth pedagogical element offers that the instructor must move outside of their comfort zone with a movement beyond the course content. An interpretation of this element is that there is a continuous self-imposed pressure to expand the learning. This interpretation extends to the final pedagogical element, the use of various models that present a pattern that encourage learners to utilize a variety of models.

The application of the research participants' pedagogy to the CIM reveals that a rethinking of pedagogy includes multiple realities in terms of elements within pedagogy.

All of the pedagogical elements reveal a conscious effort to aid learning. None of the research participants delineate their full practical theories. Overall, Schorr's (1997) description of pedagogy as an "iceberg" (p. 29) remains true.

Some research participants' exposed their pedagogy. The pedagogical thoughts are pedagogical "insight" (Leonard & Sensiper, 2002, p. 486). An interpretation is that large portions of pedagogy remain hidden and are not explicated. Of importance, none of the pedagogical statements present conflicting ideas with the CIM infusion of theories of change within pedagogy.

The combination of the rated opinion of the model as generally satisfied, and the fact that the explicated pedagogy is not in conflict with the CIM, led to the realization that there is an inherent contradiction when using the CIM. The contradiction is that research participants are not be able to consciously detail their practical theories but can determine a fit or comfort level for adapting pedagogy for contemporary change. Thus, conceptual pedagogical change is possible in elements of pedagogy that were expresses even though one's full pedagogy is not in the articulations in the data. The limit to the extent of pedagogical rethinking surrounds the research participants' ability to conceptualize their pedagogy.

5.5.4 Reflections – Tertiary Pedagogy

Tertiary pedagogy, as discussed in Chapter 2, includes a focus on lifelong learning, the use of alternative settings, conventional and unconventional pedagogy (Wagner, 1988), along with a movement to intertwine work and education (Newmann, Secada, & Wehlage, 1995; Wagner, 1988). Tertiary pedagogy is a continuous process that establishes practices for quality learning (Christie & Ferdos, 2004).

Practical theories reveal elements that are key to tertiary learning. The pedagogy indicates practice is adaptable to advance the quality of the learning. There is a movement toward pedagogical responsiveness to the learners by altering the strategy to the needs of the learners. An interpretation is that the individual instructors' opinion is the key element for adapting pedagogy.

5.5.5 Reflections -- Lewin's (1951) "Life Space" and Tertiary Pedagogy

The CIM is not immune to the force of change. Contemporary change forces are part of an educators "life space" (Lewin, 1951, in Askew & Carnell, 1998). The CIM collaborative discourse method is open to a variety of formats including video-conferencing, weekly e-mail updates and regular on-line discussions (S3-2). In addition, the research participants suggest the model not be a linear series of steps but a circular process to allow the model to be open to changes in access and the use of the steps. Upon reflection, the researcher determines that the model has to be flexibility for the alternative settings and options in tertiary pedagogy.

5.5.6 Reflections -- Senge (1990) and Conner and Prahalad (2002) In Relation to Tertiary Pedagogy

In this inquiry, professional development is a key component in tertiary pedagogy that aids learning how to adapt to change-based times. Upon reflection, the CIM framework aligns with this interpretation. The Step 1 framework uses Senge's (1990) conclusion that "no one has more sweeping influence than the designer" (p. 341). The use of this conclusion in Step 1 places the instructor, the designer of pedagogy, as the key driving force responsible for the effort to learn how to adapt, and to ultimately adapt pedagogy, for the times.

The framework in the second step in the CIM includes personal opinions influence teaching and impacts the learning context and practice (Brockbank & McGill's, 2003; Salmon, 1989). An instructors' personal stance is one's "flexibility effect" (Conner & Prahalad, 2002, p. 105). In the CIM, this "effect" allows the use of personal knowledge or ideas and options in the development of pedagogy for postindustrial times. Thus, the design of Step 2 encourages the development of one's perceptions for advantage in devising pedagogical options.

The incorporation of conclusions by Senge (1990) and Conner and Prahalad's (2002) in the first two steps in the CIM place the instructor as responsible and influential when developing pedagogy for the times. This positioning of the instructor is in direct alignment with the concept of professional development.

5.5.7   Reflections -- Slattery (1995) and Meaning in Tertiary Pedagogy

The framework in Steps 4 and 5 includes a constructivist perspective. The basis of this framework is learners construct meaning (Slattery, 1995). In the CIM, the construction of meaning concerns pedagogy for contemporary change-based times. Reflection occurs on the meaning of key characteristics from theories of change and the conceptual infusion of the characteristics within pedagogy and the means to create a context of contemporary change.

Construction of meaning for pedagogical use is difficult to attain. S2-1 illustrates that (a) change demands constructivist learning approaches, (b) instructors must learn to construct their knowledge, and (c) "a" and "b" can be difficult to complete. This participant states:

> That 'a' and 'b' sound so simple …but they are absolutely world shattering. They are very difficult because their [the instructors'] whole world is constructed in ways that they have never acknowledged explicitly.

The research participants indicate that the construction requires an environment that encourages and supports educators to continuously reflect and construct. Research participants indicate that educational institutions need to recognize their role in tertiary practice and support pedagogical designers. Research participants indicate that institutional support is not always present. One research participant suggests: "the institution needs to take a more collaborative journey with me" (S3-1). This position follows Fullan's (1993) statement that the educator and the educational system need to work in unison and "it [is]

necessary to work on them separately looking for opportunities to make them connect" (p. 12).

The research participants indicate the need for a new institutional setting that has the educator and institution adapting simultaneously. The educational institution needs to adapt to support the implementation of tertiary practices as educators work through the challenges of pedagogical change. Due to the need for institutional support and the challenge of constructing meaning and adapting pedagogy for the times, the CIM does not suit all instructors.

5.5.8 Research Question 2(b) -- Conclusions

The authoritative literature indicates that pedagogy or practical theories are valuable but difficult to access. During the trials, research participants conceptualize their pedagogy in various manners and reveal elements within pedagogy. However, full exposure of the research participants' pedagogy is not a reality. The pedagogy indicates a movement to adapt current practice to advance learning. The instructor is the key adaptation agent.

The CIM framework places the model within a tertiary pedagogical context that includes learning as professional development. However, the reorientation of pedagogy with the CIM needs a new type of learner and educational institution. A learner needs to be willing to risk experimentation and an institution willing to support experimentation. A "collaborative journey" (S3-1) of tertiary practices between the educator and institution is, according to the research participants, not in existence at all institutions. As such, some instructors must be willing to chance experimentation without the necessary institutional support system to gain a greater understanding of pedagogy. Due to this situation, the model is not for traditionalist educators and institutions.

5.6   Interpretations -- Research Question 2(c):

What are the Reported Impacts of the Change Infusion Model on the Pedagogical Approaches of the Research Participants?

This section discusses the impacts of the CIM on the capacity of the Gay (1995) infusion-based model, the realities of tensions in academic life and paradoxes.

5.6.1 Reflections – Reported Impacts and Capacity of a Gay (1995) Infusion-Based Model

An interpretation of the findings is that CIM guides instructors to an awareness of infusing characteristics from theories of change within pedagogy. The CIM does not have the capacity to guide all instructors to accept the pedagogical strategy for contemporary times.

A Gay (1995) infusion-based model develops an awareness and understanding for infusing key characteristics of change within pedagogy in the majority of research participants. In the stage 3 trials, S3-1 and S3-2 illustrate their understanding when they express a key characteristic of contingency theory that includes no one structure "is superior to all others in all cases" (Owen, 2001, p. 399). These 2 research participants adapt their pedagogy to express this characteristic by framing a question and answer period with a new structure for them. These two research participants "sat in front of the class… [and said] you are welcome to our brains…and the questions were phenomenal…we bounced off of another …with no rehearsal." The free form structure moves the research participants beyond a normal structure, and in this case, it is successful. The use of a free form structure provides these instructors with another pedagogical option. S3-3 concludes that the CIM is valuable "because it provide[d] a backbone of support to make you comfortable with change…it's a nice rationale."

Another example of the capacity of the model includes S2-1's indication that they will implement some of the pedagogical options. S2-1 states: "this model allows you to do a lot of options… I will implement some of the options" and "I like the idea of infusing complexity into pedagogy."

Overall, the capacity of the Gay (1995) infusion-based model includes developing awareness and understanding of the model for use by the majority of the research participants. The model did not illustrate the capacity to guide all research participants to infuse contemporary change within pedagogy. The research participants conceive a range of impediments impact the ability to conceive the model for use in practice. The revelation of the impediments leads to an interpretation that philosophically an instructor may be conscious of the CIM as a means to incorporate theories of change into pedagogical practice, and agree that one must adapt pedagogy for the times. However, practical implications make the adaptation of pedagogy for the times difficult for some research participants.

5.6.2 Reflections – Impact and Reality of Tensions in Academic Work Life

The findings indicate that the process of change has a direct bearing on one's academic work life. A variety of academic work issues in the research trials collaborative discourse data include tensions in academic work. The four tensions found in the data include:

- Tensions in academic work from wanting to be emergent and yet feel the stress from time restrictions,
- Tensions due to one's comfort level for change and a level of support one requires and has from the academic institution when adapting pedagogy. Research participants suggest that those faculty without tenure find that being adventurous is risky to one's career,
- Tensions when a participant's pedagogy is not fully understood and subsequently attempting to adapt one's pedagogy is frustrating, and
- Tensions from change affect workload and necessitate additional support from the educational institution during the adaptation.

Research participants indicate tensions in academic work life stem from the desire to be in emergent learning yet time is not available for emergence. The

discourse suggests that change impacts one's available time. The time is not always available in an educators busy work life in order to adapt pedagogy by infusing theories of change. According to Herron (2001), "theory is helpful …unfortunately it takes time to learn the theory" (p. 29). In this inquiry, time is necessary to learn the CIM, as well as to explore and conceptually apply the theory.

S2-3 reveals that time constraints impact academic life. This participant feels an academic must discriminate in the selection of activities because one must meet an institutional agenda. Overall, S2-3 expresses that they want "to be emergent but they [are] agenda anxious." In support of the presence of pressure for time, S3-3 states: "I'm often fighting what I need to get done versus what I would like to do." Academic work life is a challenge as one attempts to develop knowledge given the constraints of time.

A second work life tension reveals that new knowledge places an instructor in unfamiliar situations, and that is a place they do not want to be. According to S2-2, new knowledge moves an instructor into "that ambiguous place*."* Being in a place that is unfamiliar and requires research participants to work through the experience. The research participants indicates that there is no instructor training to aid in learning to work through experiences as it relates to the development of pedagogy for postindustrial times. Working through the process of change requires a comfort level for the experience and the availability of time.

A comfort level for change is contingent on the support one feels the academic institution provides to educators working with change. S3-2 indicates; if they feel a movement beyond their comfort level, they tend to pull back. S3-3 explains that one pulls back due to a fear that the necessary level of support for new strategies will not be available. S2-1 suggests that, overall; higher education institutions are "not great risk taking places…everyone feels that

every risk is an opportunity for failure…there is a product-based mentality."
Change alters one's level of pedagogical comfort, and thus instructors that are
not able to reach a comfort level are not able to adapt for contemporary times.

The findings reveal that one cannot force another to deal with change. This
includes that one could not be force another to translate change knowledge into
practice in an environment without the necessary comfort level for change. The
collaborative discourse indicates a belief that one is able to ignore change.
Also, the research participants discuss that even though an individual
understands the concepts in the CIM they may not translate this knowledge into
practice. If an instructor is not willing, lacks understanding, or is not in a state
of readiness for change---then pedagogical change can not be forced. This
stance follows Foucault's (1984) argument that the continuous development of
the self includes the power of an "individual to change at will" (p. 329). The
use of this power is up to the individual. The discourse supports the concept
that all instructors are not in a state of readiness for understanding and/or
implementing the CIM.

Another tension is how attempting to adapt one's pedagogy is at times a
frustrating experience. Frustration is from being unaware of the current
elements within pedagogy and that creates a difficulty when rethinking
pedagogy. A work life tension includes the frustration of understanding one's
pedagogy in order to adapt for postindustrial times.

Another tension arises as change affects one's workload. There is a general
agreement among the research participants that educational practice needs to be
emergent. However, the research participants feel that there is work with
respect to emergent knowledge. The research participants indicate that the work
of the pedagogical designer [the instructor] goes "up exponentially due to high
structure needs due to the options available in changing designs." The discourse
suggests a plan is necessary when one deals with emerging ideas and the arising

workload. This plan includes ensuring time is available to explain assignments and provide ongoing guidance when utilizing new pedagogical options. S2-1 feels the volume of work for a higher education instructor using the CIM is "immense;" however, S3-2 states that the introduction of the CIM is timely "because I was beginning to feel stagnant with what I was doing." Thus, the extra effort for a change model is worthwhile for some educators as part of the ongoing effort to remain vibrant as an instructor.

Tension arises as research participants perceive a lack of support from the institution if an instructor uses a change model. The support necessary when using the CIM includes the support of the Chair of the academic department for the idea of pedagogical change and experimentation, along with support in the budget for the necessary teaching assistants.

The stage 2 and 3 research participants feel the emphasis in higher education is on research and that an academic's main currency within the institution is research. Research participants question whether higher education institutions would be willing to provide the necessary support to an instructor utilizing the CIM. S2-1 offers the opinion that the educational institution "would like to think people understand that the future is change-based and that we need more competencies." However, this participant indicates that the institution neglects to facilitate the use of new ideas or concepts in a meaningful way. The findings suggest instructors need to discriminate in their choices, as the higher education institution may not be supportive of the risks one chose to take. The research participants discuss the belief that for faculty without tenure, being adventurous is risky to one's career. The stage 3 research participants express a feeling without support when trying a new concept. If they look for support from the institution, they expect it to come at a "snail's pace" (S3-1). S3-1's opinion is that when it comes to pedagogy and teaching, "the institution needs to take a more collaborative journey with me."

Overall, the findings reveal that the impact of the CIM includes multiple tensions. In addition, paradoxes arise.

5.6.3 Reflections – Paradoxes and the CIM

A predominant perspective in the literature on change is an *adaptation perspective.* This perspective indicates that individuals are capable of voluntarily adjusting to changes in the environment (Daft & Huber, 1987; Lewin, 1951). However, adapting pedagogy is not a simple process. Paradoxes arise in the process. Van de Ven and Poole (1988) define a paradox as "a real or apparent contradiction between equally well-based assumptions or conclusions" (p. 22). The adaptation of one's pedagogy for postindustrial times with constructivist methodology is rife with contradictions. Paradoxes from the CIM trials include:

- Rethinking pedagogy when the correct questions are unknown,
- Negotiating the correct amount of infusion of change when a correct amount is an unknown,
- The alignment of pedagogy for the times and then contending with an "implementation dip" (Fullan, 2001, p. 40) in success, and
- Determining if the direction of the reconstruction of pedagogy is correct for the times when the correct pedagogy is an unknown.

One paradox in the CIM is that research participants are to use a process of self-developed questions when rethinking pedagogy. This method of questioning is a means to develop new knowledge (Symes & McIntyre, 2000). LaDuke (2004) purport that the key for the instructor (the knowledge creator) is the ability to be able to pose questions that guide the conversion of what one knew into new knowledge. LaDuke concludes that it is the contextual questions that assist the development of what he refers to as "new knowledge" (p. 66). LaDuke proposes that the knowledge conversion produces "cutting-edge solutions" (p. 66). However, there is no way of determining if the questions are correct. What if a participant asks the wrong questions? How would an instructor know when

they are asking the right questions for adapting pedagogy for the times? The answer is not known.

Another paradox in the CIM infusion process is that a participant self-negotiates the amount of infusion of key characteristics from theories of change to create a pedagogical impact. A correct amount is unknown. This paradox of rethinking leaves the pedagogical designers (the instructors) where Lathier (1991) positions the feminist process, at "the intersection of choice and constraint" (p. 81). A choice of when to stop the infusion process is necessary; however, research participants are left to infuse change without knowing the correct amount—or when to correctly stop the infusion process.

In addition, instructors adapting pedagogy for the times are vulnerable to what Fullan (2001) refers to as an "implementation dip" (p. 40). This dip includes a decline "in performance and confidence as one encounters an innovation that requires new skills and new understandings" (Fullan, p. 40). The paradox is that if a participant adapts pedagogy for greater alignment with the times, a period of declining success arises due to the instability from pedagogical change. The stage 2 and 3 research participants indicate that a movement to remain pedagogically current and adapt to the times brings forth realities of practice that are a challenge. Chancing a dip in performance is one of the realities when adapting for change.

The paradoxical situations become apparent to the research participants rethinking pedagogy. In response to the realities, S2-1 suggests that the CIM is valuable for practical use; however, the model is not a tool to underscore all of one's instructional and learning strategies at once. The implementation of pedagogy with the CIM is appropriate for practice if one incrementally phases-in the options for pedagogy informed by change. A phased-in process affords an instructor the time necessary to manage and resolve for themselves

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paradoxes inherent in the use of the model. Upon reflection, the suggestion for a phased-in process is a logical use of the model as paradoxes impact the users.

5.6.4 Research Question 2(c) -- Conclusions

An analysis of the findings indicates the CIM has the capacity to guide research participants to develop pedagogy for change. However, this capacity does not extent to all research participants. An interpretation is the demands of one's academic work life and the tensions and paradoxes abound and constrain one's attempts to rethink pedagogy for contemporary times.

Tensions stem from (a) wanting to be emergent and yet stress occurs from the need course content and the time frame, (b) the research participants' comfort level for change, (c) the level of support (or lack of support) one feels the academic institution provides, and (d) change affects workload. In addition, tensions arrive from a participant's pedagogy that may not be understood and subsequently rethinking pedagogy is a frustrating experience. Paradoxes arise (a) when the correct questions to ask when rethinking pedagogy is an unknown, (b) when the correct amount of theory of change infusion is an unknown, (c) when the alignment of pedagogy for the times includes a decline in success, and (d) the correct reconstruction of pedagogy for change is an unknown. A phased-in implementation process for pedagogical options offers a means to manage of tensions and paradoxes that impact the model user.

5.7 Interpretations--Research Question 2:
What is the Efficacy of a Change Infusion Model in Enabling a Cohort of Professionals to Frame Their Instructional and Learning Strategies in a Context of Contemporary Change?

The discussion on the efficacy of the CIM includes three stages of trials in this inquiry. Reflections on the efficacy in the stage 1 trials are in the discussion first, and then the discussion moves to Stages 2 and 3 trials.

5.7.1 Reflection – CIM Efficacy in the Stage 1 Trials

The stage 1 research participants indicate a lack of understanding concerning the CIM. Stage 1 research participants understand the CIM as a teaching strategy about change, not a pedagogical strategy. Examples are found that illustrate understanding of the CIM as a teaching strategy. The examples include S1-1's suggestion to use of a "quote-of-the-day" to begin discussions about change in a classroom. In addition, this participant states they can utilize the segment in the Apollo 13 movie where astronaut Jim Lovell states, "Houston, we have a problem." The participant indicates that this section of the movie reveals the "impact that change can have on the organization, the human resources, and complexity." In addition, S1-3 indicates the topic of "change" is one that the students like and that there are no problems stimulating discussions about change. However, S1-3 states that the material is too complex for the students in their class. This instructor feels that "some of the information is not in the students' current range of knowledge." An interpretation is that the participant presents the CIM information on theories of change without putting it through the filter of their class context. The issue of the material being too complex is also interesting due to the fact that the students were all practicing educators taking an additional higher education qualification course for certification. Thus, this comment indicates that this research participant's group of students are not knowledgeable concerning theories of change. However, the research trials design does *not* concentrate on the students. The area of emphasis is on the individual instructor and their opinion on the use of the CIM to guide a pedagogical response to postindustrial times.

Overall, the stage 1 examples illustrate the stage 1 research participants used the CIM as a teaching strategy *about* change and not a pedagogical strategy *for* a context of change in the classroom. Thus, the model did not guide research participants in the stage 1 trials to an understanding and awareness of the CIM as a pedagogical strategy for contemporary times.

While the stage 1 research participants' reflective comments indicate the use of the CIM as a teaching strategy and not a pedagogical strategy, the model is still seen as a valuable tool. The value in S1-1's statement is that the model and information package produce some "very interesting discussion and something that probably would not have developed had I not been utilizing the infusion model." In addition, S1-2 states that the CIM is

> an excellent model that should be endorsed by the educational
> system around Canada. I appreciate the work and we need more
> of this type of work going around. Teachers and administrators could
> learn a lot from this model.

These two examples illustrate that the research participants feel the CIM is valuable, even as a teaching strategy.

5.7.1.1 Interpretation of Stage 1 Trial Participant Acceptance of the Model

Why would instructors that exhibit interest in using the CIM and show a level of satisfaction with the model not move towards a pedagogical strategy? Four plausible explanations include: (a) that the trial research participants are resistant to changing pedagogy, (b) the cognitive-constructive 3-2 ratio in the CIM structure is incorrect to guide instructors towards a pedagogical strategy, (c) the model needs to include additional methods such as the use of collaborative meetings to aid in guiding research participants towards a pedagogical strategy, and (d) the research participants readiness to conceptually rethink pedagogy is not at the level necessary.

The first plausible explanation as to why the stage 1 research participants did not understand the CIM as a pedagogical strategy is that the research participants are resistant to changing their pedagogy. Schön (1973) indicates that there is a tendency for some individuals to resist change. Adapting pedagogy is potentially a difficult task for instructors, and they may have exhibit a resistance.

The second plausible explanation includes the cognitive-constructive ratio in the structure of the CIM. The CIM structure includes three cognitive steps that provide a prescription of what to do and encourage a consistent knowledge outcome. Then, two constructivist steps require research participants to rethink pedagogy. Thus, the CIM structure includes 3 cognitive steps and 2 constructivist steps—a ratio of 3-2. This ratio is potentially incorrect to guide research participants to a pedagogical strategy.

The CIM structure has the cognitive steps to provide the ability to train research participants to do a task consistently (Schuman, 1996). The three cognitive steps establish a process that guides research participants towards a consistent outcome of learning about change. The learning with the two constructivist steps encourages a pedagogical response for change.

Cognitive and constructive perspectives share some complementary elements that include a link through schema theory (Schwier, 1995). Schema theory includes one's currently held internal knowledge. This theory states that new information is understood because an individual develops a means to interpret their world (Anderson, 1984; Berliner, 1986). Thus, an interpretation is "constructed through experience" (Sparks-Langer & Colton, 1991, p. 2). The cognitive and constructive perspectives overlap as they both allow the learner to build upon the foundational base of knowledge and experience.

The inclusion of constructivist theory allows research participants to interpret multiple realities (Schuman, 1996). The value of multiple realities includes aiding in (a) dealing with real life situations, (b) problem solving, and (c) the construction of learning and the application to novel situations (Schuman, 1996). The constructive premise allows the CIM to encourage research participants to explore and apply knowledge in an effort to reconstruct pedagogy for postindustrial times. A constructivist methodology creates a broader understanding of knowledge and encourages the development of more knowledge (Cuttance, 2001). However, the use of constructivist methodology decreases the consistency of the research participants' response. This creates a challenge for instructors as it leaves them to sort through how to explore pedagogy and theories of change, and how to apply theoretical characteristics into pedagogy, and to determine if one reaches the correct result.

There are no standards in the literature to measure the correctness of personal knowledge for infusing change within pedagogy. In addition, knowledge utilizing constructivism is in a constant state of flux as learners continuously analyze, adjust, and create conclusions (Brockbank & McGill, 2003). The knowledge development is never in a state of completion with predicable and controllable outcomes.

The CIM utilizes 3 cognitive steps to 2 constructivist steps as a starting point for this research. There are no guidelines available in the literature to guide the starting point or position. For this study it is reasonable to have a little more prescriptive guidance (cognitive) than interpretative focus (constructive). This ratio is consistent for the entire course of this research study, but future research may want to examine the ratio between the two theoretical orientations.

Perhaps it is not the CIM that is at issue. A third plausible explanation is that an instructors' personality, previous insight with regard to change, response to change, and conceptual abilities are factors that contribute to one's readiness to

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use the CIM as a pedagogical tool. In that regard, not all research participants process the model in the same way or from the same starting point. Even though all the research participants are instructors at the higher education level, their prior knowledge and training may influence their ability to utilize the concepts in the CIM in their own pedagogy. The research participants may not all have had the readiness to utilize the CIM.

A readiness to utilize the CIM is dependent on an individual's ability to adapt for change. Rogers (1971) suggests that there are different adoption times for change. Rogers proposes that there are 'early adopters', 'not early adopters', and 'late adopters'. Rogers's conclusions on one's adoption timing for change do not indicate when individuals develop the capability to participate. Just because one chooses to change does not mean the individual has the capabilities to complete the adaptations. According to Schultz and Schultz (2000), Rogers promotes that one develops their potential self. A personal change adoption selection influences this potential. However, the CIM involves more than the simple timing of when to adopt--research participants conceptually explore and apply in order to construct knowledge. Research participants need to choose to adapt for change and to construct knowledge to conceptually complete the adaptation. An interpretation is that all instructors are not in a state of readiness to complete both of these elements.

A fourth and final plausible explanation as to why the stage 1 research participants did not use the CIM as a pedagogical strategy includes that the CIM fails to provide the appropriate guidance. The research participants develop an awareness and orientation for the infusion of key characteristics from theories of change into pedagogy. A review of the stage 1 trial research participants' guided records indicates that the CIM did not guide research participants to a pedagogical strategy. The participant responses indicate the use of the CIM is understood as a teaching strategy. An interpretation is that the design of the CIM did not lead the research participants beyond a certain point

in considering change. Or, the individual instructors may simply require greater guidance to see beyond using the steps as a teaching strategy to constructing a response to change as a pedagogical strategy.

5.7.2 Reflection – CIM Efficacy in the Stage 2 and 3 Trials

The stage 2 and 3 trials use a collaborative discourse method to aid the realization that the model is a pedagogical strategy. The findings indicate that the stage 2 and 3 trial research participants did develop an awareness and orientation for infusing key characteristics from contemporary theories of change into one's pedagogy for practical use. Thus, the model (with a collaborative meeting method) has the efficacy to guide research participants to a pedagogical strategy.

S2-1 indicates a consciousness of the model as a pedagogical strategy in their statement: "I am currently introducing complexity and contingency theory in class but have not [previously] used the theories in my pedagogical design" and "I like the idea of infusing complexity into pedagogy." S3-3 indicates "this concept has for me now moved the subconscious to the conscious. As such, I will continue to embrace 'change' and ways to incorporate it in my pedagogy." In addition, S2-1 indicates that "this model allows you to do a lot of options…oh yes, I will implement some of the options."

The stage 1 research participants did not use the model as a pedagogical strategy. After the inclusion of a collaborative meeting method in the stage 2 and 3 trials, the CIM has the efficacy to guide the research participants to understand the model as a pedagogical strategy.

5.7.2.1 Reflections -- The Efficacy of the CIM with a Collaborative Discourse Method

A collaborative meeting method provides group support for the stage 2 and 3 trials for learning. This method offers opportunities for the research participants to develop and reinforce understandings of the CIM as a pedagogical strategy.

Research participants use the collaborative forum to express understandings and to interchange ideas, opinions, and comments on the CIM and the participant information package. The collaborative meetings also offer the researcher opportunities to emphasize that the CIM is a pedagogical strategy.

The stage 2 and 3 research participants feel the collaborative meetings are valuable for learning the CIM. Examples of descriptors provide the value of the collaborative meetings and include: "most useful" (S2-1) and provides "great idea exchanges within the conversations" (S2-1). In addition, S3-2 indicates the meetings act as a "springboard from which to generate my own ideas and opinion." S3-2 states that the collaborative meetings provide an opportunity to affirm and reaffirm one's understandings of the model. An understanding of the model affirms ideas as S3-2 indicates is "like a dam bursting." S3-3 concurs and states that the collaborative meetings provide a forum for discussions that are "enlightening." Participant responses confirm the view from Reichenback (1988) that learning with collaboration facilitates exposure to a variety of perspectives.

From on responses from research participants, an understanding of the CIM as a pedagogical strategy is contingent upon a communication method when learning the model. In particular, collaboration to guide the research participants to complete the constructivist steps is necessary.

The value of a collaborative method is what Friend and Cook (2003) describe as an interaction style for the effective promotion of an understanding from the frame of reference. The pedagogical practice of the research participants has a greater chance to impact the CIM with a collaboration method as "knowledge [is] created out of a dialogue" (Nonaka, 1991) and that collaborative efforts aid success (Herron, 2001) due to the group interactions (Swartz (1998). Collaboration assists the development of awareness and an understanding of how to translate change theory into practice.

However, if the view from Symes and Preston (1997b) and Zack (2002) is true, then one must expect to become their own teacher in the pursuit of one's own knowledge. Did collaboration fit into this viewpoint? Perhaps the concept of knowledge began from the foundation of what is known (Rader & Rader, 1998). The collaborative method contributes to the efficacy of the CIM by providing a conscious awareness of what is known by aiding in explication and discussion of the knowledge. S3-3 supports the statement that the collaborative method encourages the movement of the CIM concept "from the subconscious to the conscious." Thus, the CIM concept moves to the consciousness of research participants with a collaborative method.

If one is in a state of readiness to construct a pedagogical response, the question arises: Is the ability to construct knowledge with a rethinking process a natural ability; or an ability that requires a nurturing process?

5.7.2.2 Reflections -- A Constructivist Process: A Natural or Nurtured Ability?

The literature indicates that learning to construct knowledge is indeed a process that is nurtured. Emery and Trist (1973), Hout (1999), and Dyer-Harris and Zeisler (2002) discuss a belief in the ability to self-nurture one's learning. These researchers promote that individuals were capable of a self-designed method or system for knowledge construction. This system includes a personal design for a set of procedures that establish a personal process to construct knowledge. Dyer-Harris and Zeisler promote that individuals can learn and practice creating a system for establishing a set of procedures for developing knowledge. An important element of this process of self-designed procedures to construct knowledge is that the process could not be taught (Dyer-Harris & Zeisler). The key to producing a system to construct knowledge is through participation. Thus, a logical extension of the Dyer-Harris and Zeisler stance is to expect that learning to utilize the CIM constructivist steps to rethink pedagogy could come from nurturing, participation and practice. A nurturing

process (in this case, a collaborative method) assists instructors in the development of knowledge by "seeing how things work [and] can be combined to good effect" (Campbell & Gregor, 2002, p. 13).

Every research participant, although they are higher education instructors, does not possess similar abilities and traits for developing knowledge for a pedagogical response with a constructivist methodology. An analogy that concerns the development and advancement of the automobile illustrates this point. As the use of the automobile is widespread, advancements and knowledge are made. Rethinking of the automobile for maxim benefit took place. It took decades for drivers to acquire the knowledge, insights, and perceptions that result in the construction of the rules and regulations of the road for the safe and efficient use of the automobile. In addition, a rethinking of the manufacturing process leads to vehicle enhancements (e.g., fog lights and power steering). Over time, drivers gain sophistication in managing different driving conditions (such as inclement weather and traffic volumes) and create strategies through exposure.

If the same process for the automobile holds true for pedagogy, over time instructors' development of knowledge, or ability to rethink pedagogy for contemporary times will advance. A rethinking of one's pedagogy with theories of change may lead to knowledge and perceptions for pedagogical use. The development of strategies for pedagogical use is a consequence of exposure to rethinking. This issue is considered in a continuation of the discussion of the automobile analogy.

Each instructor determines his or her awareness and orientation concerning the CIM. In an automobile analogy, drivers differ in their style. For instance, some drivers use the passing lane often. Others are content (and survive in comfort) in the slower traffic, non-passing lanes. With respect to the CIM, some instructors' style includes always being within their pedagogic comfort zone.

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This pedagogical comfort zone may not be clearly understood, even by the instructor, but it is comfortable, and change unsettling.

Overall, the CIM rethinking constructivist steps are a fast-lane driving style and all instructors are not comfortable with or capable of completing. Part of their discomfort is due to a lack of readiness to utilize the CIM. Over time, participation and practice utilizing the CIM nurtures a readiness to use the CIM. Collaborative meetings aid learning when research participants engage with the model. Thus, a recommendation from the stage 2 trials is that a collaborative meeting method be instituted when learning to use the CIM.

The use of additional communication strategies for institution with the CIM are found in the data. S3-3 suggests the incorporation of collaborative on-line communication on a weekly basis. The on-line communication between the researcher and the research participants offers as an additional manner in which to discuss the model. The suggestion is useful, and on-line collaborative meetings or other communication methods are interpreted by the Research Committee for use in future longitudinal trials.

5.7.2.3 Reflections – CIM Efficacy and Realities of Academic Life

An interpretation by the research participants is that the reality of educational practice includes a lack of institutional support for pedagogical experimentation. Adapting pedagogy is risky for the instructor willing to experiment. Tertiary pedagogical practice includes adapting practices, but adapting places one at risk in some institutions—especially for instructors without tenure. Research participants indicate lack of institutional support if a pedagogical experiment fails. Therefore, the CIM is not appropriate for use by all instructors. Candidates for using the CIM require institutional support or those willing to work towards a level of support for pedagogical change, or those willing to risk the lack of support. The realities of support in academic

life are an element that affects the efficacy of the model to guide an orientation to pedagogically adapt for change.

5.7.3 Research Question 2 -- Conclusions

In summary, the stage 1 research participants did not understand the CIM concept of infusing pedagogy with characteristics of theories of change. The stage 1 research participants present an understanding of the CIM as a teaching strategy about change, not a pedagogical strategy. Yet this group of research participants interpret the model as a valuable tool. Four plausible explanations as to why the research participants lack an understanding of the model as a pedagogical strategy include: (a) the trial research participants are resistant to changing pedagogy, (b) the cognitive-constructive 3-2 ratio in the CIM structure is incorrect to guide instructors towards a pedagogical strategy, (c) the model requires an additional communication method to aid the guiding process, and (d) some research participants lack the readiness to conceptually rethink their pedagogy.

The efficacy of the model greatly improves in the stage 2 and 3 trials. These trials use collaborative discourse method. With collaboration, the stage 2 and 3 trial research participants develop an awareness and orientation for infusing key characteristics from contemporary theories of change into pedagogy for practical use. Generally, the stage 2 and 3 research participants feel the CIM is now in their consciousness and is acceptable for practical use.

The efficacy of the CIM to guide research participants to a pedagogical strategy is contingent upon a communication method. A collaborative method provides nurturing to an understanding of the model as a pedagogical strategy. An interpretation is that all instructors do not possess knowledge for a pedagogical response with a constructivist methodology. Participation in a collaborative discourse method aids in guiding research participants to a pedagogical

strategy. Thus, this study recommends a collaborative discourse method when learning the model.

Overall, the engagement with the CIM offers a conscious awareness of the strategy to incorporate theories of change into pedagogical practice. An underlying premise is that once an instructor took the initiative to personally rethink pedagogy, the "Copenhagen Interpretation" (Heisenberg, 1958; Pashler, 1998) came into play. As such, an instructor could not go back to the state of not being unaware of the CIM and the concept of infusing theories of change as pedagogical option for change. This interpretation indicates that research participants' consciousness of pedagogy for the times alters, even if they determine the option is viable for practical use or not. However, realities of academic life include a lack of institutional support when one uses a change model. The orientation to utilize the model in practice is potentially affected by this lack of support.

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5.8 Interpretations -- Research Question 3:
What are the features of a refined framework for pedagogy for
contemporary postindustrial change that emerge from the field research?

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A preliminary CIM has the design arise from the use of analyses of authoritative literature. Refinements to the model are made from three stages of research trials whereby research participants engaged with the model. Each of the three stages of trials produces refinements for the model.

5.8.1 Reflections -- Refinements and the Use of a Series of Steps

The stage 2 research participants offer the only suggestion in the 3-stage trials for refining the CIM. As discussed earlier in this chapter, the suggestion is to place the model steps into a circular process. The model steps are now two continuous cycles. The first three steps in the model create a cognitive cycle about change. The last two steps in the model create a constructivist cycle for change. The use of continuous cycles allows options when accessing the model. One is now able to enter the CIM at any point within either model (once one

learns the model). These refinements are important as the issue of change is now within the model itself.

No suggestions alter the five steps in the CIM. No suggestions were made concerning eliminating steps, adapting the order of the steps, or including additional steps. The lack of suggestions concerning the steps means that the steps were acceptable.

5.8.2 Reflections -- Refining the CIM Participant Information Package

The CIM participant information package includes an overview of the CIM and information to support each of the five steps within the model. The participant information package is a means to provide the research participants with written material on the CIM. The presentation of the written document follows the suggestion by Glesne (1999) that an understanding of a particular phenomenon, in this case the CIM, expands with the use of documents.

Overall, the trial research participants support the participant information package format as well prepared and logical. Examples that illustrate this support: S1-1's statement that the package offers "an easy reference format" and S1-2's comment that the package includes literature that "found what is necessary to support the model." In addition, S1-3 states that the package "is thorough, complete, interesting, and well researched." S2-3's asserts that the information is "concise in that it is in-depth but not overly long." The participant information package as a whole is supported, but suggestions were offered for adapting some components within the package.

5.8.2.1 Adaptations to the CIM Participant Information Package Based on the Stage 1 Trial Findings

The stage 1 participant's suggest alterations within the participant information package that centre on concerns for visual aids and material that enhance the comprehension of the content in the package. The suggestions include: (a) the addition of summary page on the steps within the CIM, (b) the addition of

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graphics that represent each of the five CIM steps, (c) the augmentation of the information in Step 2 on a "flexibility effect," and (d) the addition of information on dissipative structures in the explanation of complexity theory.

S1-3 suggests that a summary page of the CIM steps in the participant information package is beneficial for reference to aid learning concerning the steps within the CIM. After approval from the Research Committee a summary (in the form of a synopsis of each step) is added to the stage 2 and 3 trials information package for research participants.

S1-3 suggests graphics would aid learning by illustrating the five steps within the CIM. The addition of graphics to represent each of the five steps in the model is a strategy to aid research participants to remember the steps. After approval from the Research Committee, graphics are added in the CIM participant information package to represent each step for the stage 2 and 3 trials.

S1-1 suggests that the step 2 information on the "flexibility effect" be augmented. According to Conner and Prahalad (2002), one's flexibility effect refers to differentiated ideas, interpretations, and responses that personalize knowledge. The implementation of the suggestion to augment the information offered is a means to increase comprehension and understanding of the concept of "flexibility effects;" therefore, after approval, the suggestion is implemented for the stage 2 and 3 trials.

S1-1 suggests that the participant information package needs to include material on dissipative structures in the explanation of complexity theory. Structures that are dissipative are constantly under tension from being pulled apart and reconfigured by the change forces. (Keirsey, 2003). An explanation of complexity theory in the participant information package is found under step 3. Subsequently, this suggestion encourages the researcher to include the topic of

dissipative structures in the explanation of complexity theory in the participant information package in an effort to increase comprehension and understanding of the issue of complexity. After approval from the Research Committee, this suggestion is implemented for the stage 2 and 3 research trials.

5.8.2.2 Adaptations to the CIM Participant Information Package Based on the Stage 2 Trial Findings

The stage 2 research participants reflect in the guided records and collaborative discourse on a number of issues pertaining to the participant information package including: (a) the language in the CIM participant package information, (b) the description of the cognitive-constructive situation, (c) the timing of the distribution of the participant information package, and (d) expanding the example or scenario and adding a brief outline of the model.

5.8.2.2.1 Stage 2 Trials – Language in the CIM Participant Information Package

The stage 2 research participants raise two language issues with respect to the participant information package. First, this group indicates the placement of the word "the" prior to describing terms in the participant information package is incorrect. The placement of the word "the" implies that there is one correct theory or only one correct answer and the one presented is "the" one. Thus, research participants view the use of the term "the" as stating the item is complete and not open to new learning and understandings. The research participants' information package term "the complexity theory," "the contingency theory," etc. is not reflective of the ability to be emergent. After discussions with the Research Committee, the wording in the CIM information package is adjusted to remove the use of the word "the" prior to listing the terms.

Second, the stage 2 research participants indicate the single designation of the term "flexibility effect" needs to be plural. The research participants indicate

that the lack of an "s" on the term implies there is one correct effect and it is not open to multiple realities. The term needs to represent "flexibility effects." The researcher and Research Committee interpreted that there were multiple effects and therefore, the term, in a plural form, is added to the CIM participant information package for the stage 3 research trials.

5.8.2.2.2 Stage 2 Trials – The CIM Description

Initially, the CIM information package states that a combination of the cognitive and constructivist steps in the CIM is a balance between the two elements. However, the stage 2 research participants note a tension between the cognitive and constructivist components and indicate that they did not believe that there is a balance in the state between the elements. They discuss that there is a tension between the cognitive and constructivist steps in the CIM as a tug-of-war, not as a scale or balance. An interpretation is made that there is no equilibrium state to be found or maintained between the cognitive and constructivist components in the CIM. Thus, a scale concept in the description is not appropriate and is misleading. The research participants attempt without success to determine what the relationship is. In a subsequent discussion, the researcher suggests that the relationship between the two elements is a ratio, and the group agree. The use of the term cognitive-constructive ratio is then utilized, after approval from the Research Committee.

5.8.2.2.3 Stage 2 Trials -- Timing of the Distribution of the Participant Information Package

The stage 2 trials reveal a suggestion that concerns the timing of the distribution of the participant information package. S2-3 indicates a preference for "applicable and theoretical material to be taught/given roughly at the same time." The information package outlines the entire CIM; however, the collaborative meetings discuss the information concerning the model in an ongoing process over time--one step at a time. This participant suggests that all CIM steps be presented at once. The suggestion to discuss all steps within the CIM together is at odds with the four stages of infusion outlined by Gay (1995).

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Gay indicates an order that includes the concepts of inclusion, infusion, deconstruction, and transformation. Gay's recommendations frame the CIM in this research. Gay's stages (outlined in Chapter 2) require time to allow for integration. The presentation of the CIM steps all together in one session meant time to understand and institute each step in a staged process is not available. Upon the advice of the Research Committee, the trials continued with the framework established.

5.8.2.2.4 Stage 2 Trails – The Example/Scenario and Model Figure

The stage 2 findings indicate that research participants want to expand the example or scenario on the use of the model and add a brief outline of the model.

After careful consideration, the researcher determines that an expanded example, although longer for the research participants to read, aids the comprehension of the CIM. Thus, the scenario is expanded and is ready for use in the next stage of trials, after approval by the Research Committee.

S2-3 suggests a brief outline on the model be added to the participant information package. After reflecting on the suggestion, a figure illustrates the model and is placed in the participant information package for the stage 3 trials, after approval by the Research Committee.

Overall, the findings from the stage 2 trials were utilized to refine the CIM participant information package for the stage 3 trials.

5.8.3 Adaptations to the Participant Information Package Outlining the CIM Based on the Stage 3 Trial Findings

Stage 3 research participants suggest adaptations to the participant information package. The suggestions include adaptations in the language utilized, the

timing of the distribution of material, and the correct number of theories to be offered when initially learning the model.

5.8.3.1 Stage 3 Trials -- Language in the CIM Participant Information Package

The collaborative discourse in the stage 3 trials raises a language issue not in the previous trial data. The language issue involves the use of the word "curriculum." The word "curriculum" is initially in the participant information package to describe the content for the CIM. However, the use of this term causes confusion. Research participants have a curriculum for the course they teach. The use of the term curriculum when referring to the CIM material requires research participants to differentiate between the two uses for the word--a curriculum for their course and a CIM curriculum. Subsequently, with approval of the Research Committee, the term curriculum is removed from the CIM information package. The CIM material is then referred only as the participant information package.

5.8.3.2 Stage 3 Trials -- Timing of the Distribution of the Participant Information Package

A stage 3 participant suggestion concerns the timing of the distribution of the participant information package. S3-1 states that the information on each step of the model be handed out in stages -- not all at once in one package. This differs from a stage 2 suggestion to distribute the participant information package and the offer a full explanation of the model at roughly the same time. Therefore, S2-3 and S3-1 would like differing methods for distributing information on the CIM. Offering distribution based on personal preference is at odds with the four stages of infusion outlined by Gay (1995). Thus, after consultation with the Research Committee, the trials were not adapted, and recommendations for adapting future trials were not made based on the timing suggested by the research participants for distributing the CIM participant information package material.

5.8.3.3 Stage 3 Trials—The Correct Number of Theories of Change in the CIM Participant Information Package

Step 3 in the CIM encourages research participants to develop an understanding of key characteristics of theories of change. The stage 3 research participants feel the information package includes too many theories when learning, making the step complex. S3-2 and S3-3 suggest that the material offer a smaller number of theories for the purposes of learning the CIM. After discussions with the Research Committee, the presentation of five theories is reduced to two theories (complexity theory and contingency theory) in the CIM information package.

These two theories of change are selected as they were in the initial grouping presented in the package and they are prevalent in postindustrial literature. The other theories of change initially in the participant information package are incorporated into the discussion in Chapter 2 under 2.6: The Determination of Theories of Change for Use with the CIM. This section outlines examples of theories of change for use when engaging with the CIM.

In a collaborative meeting, the stage 3 research participants agree the presentation of two theories of change would be both helpful and manageable. The participant information package on the CIM is then adapted to provide only two theories of change for use when research participants are initially learning the CIM, after approval from the Research Committee.

5.8.4 The Refined CIM and Participant Information Package

The preliminary Change Infusion Model (CIM) is refined with the use of 3-stages of research trials. The research trials sought the opinions and comments of higher education professionals engaging with the CIM that advance the model from a preliminary state to a refined model. An overview of the refinements includes:

1. The structure of the model is to include two continuous cycles--a cognitive cycle and a constructivist cycle. The use of a two-cycled structure illustrates the division between the cognitive and constructivist activities within the model. Thus, it is clear when one is moving from the cognitive steps to the constructivist steps. The user of the model progresses through the five steps in order when learning to use the model--in order to gain an understanding of the steps and concept. However, the cycles allow users to access any step at any time, depending on the needs during alternate uses of the model. In addition, users can stay in either cycle to develop knowledge for as long as one needs prior to moving to the steps in the other cycle.

2. The model includes a recommendation that a collaborative meeting method aids learning the pedagogical strategy.

3. The model includes a recommendation a phased-in manner is used when implementing the model. The model is not for use to frame all learning and instructional strategies at once due to tensions and paradoxes when rethinking pedagogy. The recommendation for a phased-in approach allows time for one to manage the paradoxes and arising tensions in academic life when reconstructing pedagogy.

4. The participant information package includes several instituted recommendations. Figure 2.0 aids as a summary of the model, in addition, graphics for each step in the model aid in remembering the steps, adaptations to the language within the package for clarity, and an example outlining the use of the model in practice is expanded. In addition, in an attempt to ensure clarity that the Research Committee required, the names for the steps in the CIM were adapted slightly.

The refined CIM consists of 5 steps within 2 cycles. Figure 2.0 outlines the steps and cycles in the CIM and then the steps are presented in detail below.

Figure 2.0. **The refined Change Infusion Model.**

Knowledge (For Change)
- 2 constructivist steps -

Knowledge (About Change)
- 3 cognitive steps

Step 5 Explore implications for adapting pedagogy for postindustrial change: Apply key characteristics you choose From theories of change to your pedagogy to adapt it for postindustrial change.

Step 4 Rethink Pedagogy: Explore your personal views of how theories of change can be utilized to change your pedagogy.

Step 3 Develop an understanding of contemporary theories of change

Step 2 Personalize change knowledge: Value differentiated knowledge for potential advantage—or "flexibility effect[s]" (Conner & Prahalad, 2002).

Step 1 Confront pedagogical complexity: Agree to consider infusing key characteristics from theories of change within one's pedagogy as a response to contemporary change-based times that are creating a fundamentally new environment--for work and life.

A recommendation to utilize a collaborative group of instructors when learning the CIM and adapting pedagogy follows the recommendation of the trials and the revelation that knowledge and learning is created out of dialogues (Lave, 1988; Nonaka, 1991, 1994b) and collaborative efforts aid success (Herron, 2001). Collaborative instructors are capable of taking advantage of an opportunity to create groups to exchange perspectives, ideas, and change infusion options.

Each step in the refined CIM outlined in Figure 2.0 is described below.

5.8.4.1 The Change Infusion Model

§ *S*TEP 1:

> **Confront Pedagogical Complexity: Agree to Consider Infusing Key Characteristics from Theories of Change within One's Pedagogy as a Response to Contemporary Change-based Times that are Creating a Fundamentally New Environment--For Work and Life.**

Synopsis: The first step in the CIM includes the general consensus found within the literature that the future offers a significantly different environment (Drucker, 1994; Howard, 1995; Senge, 1990b). Change alters the postindustrial environment in which we live and work. Researchers and theorists are studying the environmental changes and are defining theories about contemporary change. An overall theory is that this fundamentally new environment creates a state whereby "complexity, dynamism and unpredictability… [were] normal" (Fullan, 1993, p. 20).

The first step in the CIM encourages instructors to agree to consider a pedagogical response to the contemporary change-based times. In the CIM, this pedagogical response starts with an agreement to consider infusing key characteristics from theories of change within one's pedagogy as a response to postindustrial times that are creating a fundamentally new environment--for work and life.

The objectives for Step 1 in the CIM included the following:
- To advance an understanding that an environment of contemporary change should be expected, and
- To encourage an acceptance of the concept that contemporary theories' change may be infused within an instructor's pedagogical practice.

Further Description: The first step in the CIM includes conditions of contemporary change including linear and discontinuous change that has forged a fundamentally new environment. Linear change is generally progressive and predictable and could be followed or traced. Discontinuous change or discontinuity is not predictable and involves "novel change" (Ansoff, 1998, p. 92).

The combination of linear and discontinuous change in the environment produces interactions and permutations that create our evolving contemporary change-based times. In this environment, outcomes may not unfold as predicted (Fullan, 1993; Senge, 1990). According to Fullan, the norm in this complex environment is the unexpected. One could be face pressure to alter actions due to potentially paradoxical combinations of change. In addition, change progresses in any combination on the continuum from small to large change and from incremental linear change to rapid unpredictable change forces (Kozlowski et al., 2000). Thus, the contemporary change-based environment includes a "world of unknown unknowns" (Homer-Dixon, 2001, p. 172).

Specific components of the environment can not expect to be left unaffected by change as advancing change is pervasive (Homer-Dixon, 2001). Change has the ability to permeate all aspects of the environment including one's life and work "strategies, structure and cultures" (Limerick et al., 1998, p. 1). Educators are compelled to consider change as it influences the educational context (Kapitzke, 2000). This influence includes the development of knowledge that allows one to be adaptable and innovative (Howard, 1995) for the times. According to Barabba, Pourdehnad, and Ackoff (2002), a capacity for understanding and manoeuvring in an environment that is "more like the DNA molecule than a jigsaw puzzle" (p. 360).

An appropriate pedagogical response to this unique environment of contemporary change is questioned. In response, one option is the Change Infusion Model. The CIM includes five steps. The initial step in the model requires an agreement to conceptually consider infusing key characteristics from theories of change within pedagogy for a potential pedagogical response. This agreement included:

1.   That one accepts the condition of change as a constant environmental variable that may continue for potentially decades (Modis, 2003),

2.   That one understands that the forces of change continuously apply pressure and push for adjustments and innovative options (Howard, 1995), and

3.   That one needs a willingness to consider infusing theories of change within one's pedagogy to frame instructional and learning strategies with characteristics change.

Step 1 in the CIM encourages an acceptance to work towards the development of pedagogy that is open to the normalcy and creates an environment of understandings and insights for change.

5.8.4.2 The Change Infusion Model

≈≈ **STEP 2:**

> **Personalize Change Knowledge: Value**
> **Differentiated Knowledge for**
> **Potential Advantage—Or "Flexibility**
> **Effects."**

Synopsis: The second step in the CIM includes the promotion of the concept that the impact of an individual's abilities and perceptions provide an advantage in a postindustrial change-based environment. The impact of personal perceptions and experience create differentiation of knowledge or one's "flexibility effect[s]" (Conner & Prahalad, 2002, p. 105). One's "flexibility effect[s]," or differentiated ideas, interpretations, and responses, provide a potential competitive advantage in a postindustrial change-based environment (Zack, 2002). This advantage is a process that personalized knowledge. Personal knowledge includes the impact of one's skill, personality, motivations, abilities, perceptions, differing levels of change anxiety, and interpretations. The personalization of knowledge produces a multitude of views and aids in the production of ideas. Differentiated knowledge ensures that ideas are varied and not limited to one particular person's viewpoint (Beeth, 1995; Carney, 2001). An acceptance and the nurturing of personalized knowledge open the option for varied interpretations and varied solutions.

In the CIM, step 2 requires one to welcome and encourage differentiated knowledge. An emphasis on differentiated knowledge aids in the advancement of options for pedagogy for a design with characteristics of change.

The objective for Step 2 in the CIM includes:

- That one accept and nurture one's "flexibility effects" (personal differentiated knowledge) to aid in the formulation of options for pedagogy in contemporary change-based times.

Further Description: This step encourages openness to a wide spectrum of responses and options for pedagogy for contemporary postindustrial times. This openness includes accepting and encouraging the impact of one's personal perceptions and opinions. The search for one correct option as the solution for a pedagogical response to postindustrial times is not encouraged. Openness to a multitude of options is encouraged.

Step 2 in the CIM followed the Heisenberg Uncertainty Principle (Jonasson, 1997). This principle states that individuals are "complex and a certainty of outcome in a learning situation [is] evasive" (Jonasson, p. 28). An application of this principle to the CIM reveals that the outcome for any particular instructor or the options derived is not predictable. Any system of learning that is open must expect fluctuations (Jonassen). Openness to a multitude of options assists in creating pedagogical ideas that were potentially advantageous in postindustrial change-based times.

One's accumulation of knowledge, observations and conceptual reasoning influences one's beliefs about the environment (Choo & Bontis, 2002). The knowledge, observations, and reasoning influence one's beliefs. Beliefs affect one's decisions concerning options—in this case concerning pedagogical options. One's knowledge is the basic foundation for judgements (Spender, 2002). In the CIM, judgements are for (a) a determination to infuse or not to infuse theories of change within pedagogy, (b) the selection of key characteristics from theories of change for infusion into pedagogy, (c) a personal decision of when to move from the change infusion model cognitive knowledge cycle about change to the constructivist knowledge cycle for change

and how long to stay within each cycle, and (d) what is the conception of a design for contemporary change-based times.

Flexibility effects provide influence on judgements when research participants engage with the CIM to develop options for pedagogical use. Research participants' unique personal judgements and/or interpretations provide an advantage through what Conner and Prahalad (2002) indicate are differentiated "knowledge acquisition, and application and response to new … developments" (p. 113). The differentiation develops with the use of an individual's particular perception, interpretation, attitudes, style, and the unique features of one's personal intelligences (Gardner, 2001) and interpretations are advantageous.

Similar to the reaction of the willow tree to strong wind gusts, the ability to bend and adapt with one's flexibility effects is advantageous. Similar to the way a flexible state helps a tree stay in a growth state, flexibility aids an instructor to construct pedagogy for contemporary postindustrial change-based times. Inflexibility ultimately results in a lack of growth and leads to the demise of a tree. For an individual, an inflexible state provides the comfort of a pedagogical stance that is predetermined. However, in a change-based environment, inflexibility reduces the options and the potential appropriate response to gusts of change.

The second step in the CIM aims to build an awareness, acceptance, and utilization of one's differentiated knowledge. Instructors need to:
1.   Be open to their personal uniqueness for seeing change,
2.   Develop knowledge from personally interpreting events, and
3.   Use their flexibility effects when developing pedagogical options.
This step promotes encouraging the personalization of opinions and options and an acceptance of pedagogical perspectives that include a multitude of options. Instructors use personal knowledge, skill, personality, motivation, abilities, perceptions, and interpretations to ensure that pedagogical ideas are not limited

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(Carney, 2001). Flexibility effects aid the development of interpretations of a potential future pedagogy for contemporary change-based times.

5.8.4.3 The Change Infusion Model

 *S*TEP 3:

Develop an Understanding of Contemporary Theories of Change.

Synopsis: Step 3 of the CIM include that instructors need to develop an understanding of theories of change. Two theories of change (complexity theory and contingency theory) are for use to learn to use step 3 as a starting point for instructors to build their knowledge about change.

Further Description: Step 3 involves an engagement with theories of change that includes: (a) a review of the information on complexity theory and contingency theory in the participant information package and (b) the conceptual integration of the two theories of change into one's higher education course. The engagement concentrates on the instructor. The outcome of the engagement includes insights gained on (a) an instructor's understanding of the theory of change, (b) ability to perceive key characteristics within theories of change, and (c) applicability of the theory of change within the course discipline.

Once the model is learned, instructors are capable of selecting the theories of change to use with the CIM. Theories of change appropriate for use with the CIM are based on a decision by an instructor. Many theories of change are appropriate for use. The criterion for selecting a theory of change for use in the CIM is that the theory is "currently believed to be actually happening and the trend will shape the future environment" (Zack, 2002, p. 260). Examples of theories are in: 2.8 Theories of Change for Use with the Model.

The objectives for Step 3 in the CIM include:

- The construction of an introductory base of knowledge on theories of change.

- An engagement with theories of change by conceptually infusing the theories within the curriculum of a higher education course. This engagement fosters greater understanding of the theories about change. The engagement is open to multiple perspectives and promotes potential opportunities for the instructor to gain change insights for use in the pedagogical rethinking of the basic tenants of the theories in pedagogy in steps 4 and 5.

The two theories in this document are for use when learning the CIM.

The participant review of theory is sensitize research participants, their expectation for the condition of complexity in the environment, and an understanding that one has the option to develop an ability for perceiving and attempting to understand complexity (Coulson-Thomas, 2002; Dyer-Harris & Zeisler, (2002). Further, instructors need sensitize themselves to detecting key characteristics of the theory and hence understand its pervasiveness more readily.

Complexity Theory:

This component of the CIM information package introduces complexity theory and its basic tenants. The contemporary world is a complex place (Homer-Dixon, 2001; Pascale et al., 2000). The increase in complexity gives rise to uncertainty. Stacey (1996b) indicates that complexity includes:

> the link between cause and effect is difficult to trace, that change (planned and otherwise) unfolds in non-linear ways, that paradoxes and contradictions abound and that creative solutions arise out of interaction under conditions of uncertainty, diversity and instability. (p. 349)

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Doherty and Delener (2001) continue to expand the understanding of complexity with the identification of three key characteristics. They propose that the environment of complexity includes nonlinearity, system states, and emergent order.

Both explanations of complexity by Stacey (1996) and Doherty and Delener (2001) propose that one should expect linear and nonlinear change as part of a complex contemporary environment. In addition, the state of any system is not expected to remain consistent. Doherty and Delener suggest that the environment is in a constantly evolving or pivotal state. Keirsey's (2003) indicates that a stable environmental state is not achievable because the environment is generally made up of dissipative structures.

Keirsey suggests that dissipative structures include environmental organizational structures that are constantly under tension and being pulled apart and adjusted by change forces and are not be expected to be found in a state of balance or "equilibrium" (Keirsey, p. 4). Attempts at replication of a structure or environment during times of complexity are particularly difficult to complete.

The literature indicates that researchers are trying to understand and manage complex systems. Homer-Dixon (2002) calls the systems "intricate tangles of shifting and often opposing—contradiction—forces that unfold in unpredictable and frequently totally surprising ways" (p. 389). In this contemporary environment of complexity, Doherty and Delener (2001) believe that the creation of a managed state of stability in the environment is unattainable. However, Doherty and Delener offer that a relatively stable state (or emergent order) is conceivable if one uses a guided process.

A guided process for learning to manoeuvre in contemporary complex times includes "complex adaptive systems" (Dyer-Harris & Zeisler, 2002, p. 21). This

type of system is constructivist in nature and presents a belief that if one practices, one can develop a guided process or system for potential advantage in complex times (Dyer-Harris & Zeisler). To begin this practice, Dyer-Harris and Zeisler suggest the completion of the following:

- An examination of the environment, looking for and forecasting change (including small changes),
- The practice of a guided method for managing the particular environmental change, and
- An acceptance of complexity within the guided method.

One needs to be open to the use of options that are emergent as one practices developing a self-directed process to manage the change. A complex adaptive system includes the consideration that an ever-evolving state of affairs and requires continuous attention to manage and manoeuvre the system towards the correct balance for the moment.

One interesting condition for developing a "complex adaptive system" (Dyer-Harris & Zeisler, 2002, p. 21) is that one can not be taught to develop the system--*the key is individual learning produced through participation.* One needs to personally create the complex adaptive system for the particular conditions.

The technique of creating a complex adaptive system encourages an understanding of complexity with continuous learning to manage and develop what McElroy (2000) calls a "second generation form of knowledge" (p. 196). According to Coulson-Thomas (2002), individuals that develop and exploit new knowledge have the greatest chance to be successful in a complex environment. Homer-Dixon (2001) proposes that we all have the requirements to complete this knowledge activity--the human brain. Homer-Dixon explains that the "human brain [is] an instrument that [gives] us unparalleled versatility to adapt to our complex world" (p. 389). The process of manoeuvring in a complex

environment requires what Homer-Dixon (2001) calls "adaptive versatility" (p. 389).

There is no true end point when one develops a guided process for change. Once a direction is established, the sensitivity to change needs to continue for one to be constantly cognizant of the adaptive requirements for the specific emerging conditions.

The emerging conditions of complexity are expected to continue for decades. Complex times are referred to in the literature as "punk eek or punctuated equilibrium," (Modis, 2003, p. 26), and are to "follow the laws of natural growth" (Modis, 2002, p. 31). This natural growth pattern includes reaching a peak and then continuing to decline (Modis, 2003). If this natural growth cycle is not followed, the change rate would be so steep "that around the year 2025 we would be witnessing the equivalent of all of the twentieth-century milestones in less than a week" (Modis, 2003, p. 31). Modis predicts that future change and complexity "milestones will appear progressively less frequently with additional peaks in intervals of 38, 45, and 69 years respectively" (2003, p. 31). The peak of change and complexity occurred near the year 1990 (Modis). This suggested a continuation of complexity for decades into the future.

Overall, an understanding of complex times does not imply that the world is chaotic, but it certainly is complex (Branden, 1997; Pascale et al., 2000). A complex world is unpredictable and "full of contradictions" (Homer-Dixon, 2001, p. 389). Individuals can not expect to have the ability to maintain, recreate, or predict upcoming conditions with certainty. The simple movement, adjustment, or activity in one area worked to create complex, integrates conditions that follow linear or nonlinear patterns of activity. One could not know the final end product until it materializes. Hout explains that:

> Complexity theory elegantly reminds us of something we know but
> don't always remember - that we can't depend on any analytic

construction of the future. As soon as we and other players act on the future, we alter it in unpredictable ways. (1999, p. 7)

Step 3 encourages an understanding of complexity theory when one learns the CIM. An understanding is nurtured with an engagement with the model. The engagement encourages the development of a greater understanding of the key characteristics within the theory. These characteristics are needed for use in the constructivist cycle (steps 4 and 5) of the CIM when one explores and applies change theory into pedagogical practice.

An example of complexity is provided by Gleick's (1987) explanation of complexity with his description of the developmental conditions and outcomes of snowflakes. Snowflakes all form into different configurations as "ice crystals form in the turbulent air with a famous blending of symmetry and change" (p. 309). Potentially, every situation is seen as under the influence of forces that determined its shape. For the snowflake, the determinant forces encountered advanced from different directions: north, south, east, and west.

The snowflake advances in its development as the drops of water froze and the crystals send out tips. Overall, the

> boundaries of the snowflake become unstable, and new tips shoot out from the sides… it is impossible to predict precisely how fast a tip would grow, how narrow it would be, or how often it would branch. (Gleick, 1987, p. 309)

Each snowflake encounters stable and/or unstable conditions in the specific environmental situation in which it grows. There is a dependence on the conditions from which the snowflake initially forms and then on the conditions faced during growth. According to Gleick, if one snowflake "gets out ahead of its neighbours [it] gains an advantage in picking up new water molecules and therefore grows that must faster – gaining the 'lightning-rod effect'" (Gleick, 1987, p. 309).

As the growing snowflake fell to earth, typically

> Floating in the wind for an hour or more, the choices made by the
> branching tips at any instant depend sensitively on such things as the
> temperature, the humidity, and the presence of impurities in the
> atmosphere …. but the nature of turbulent air is such that any pair of
> snowflakes will experience very different paths. The final flake records
> the history of all the changing weather conditions … experienced, and
> the combinations may as well be infinite. (Gleick, p. 311)

This explanation of complexity expresses the development of a snowflake as an
analogy that aids one to understand complexity.

Contingency Theory:

This component of the CIM information package also introduces contingency
theory and its basic tenants. Contingency theory suggests that an organizational
structure needs to be based on the particular environmental conditions of the
time. A choice needs to be made as one system of organization is not found to
be "superior to all others in all cases" (Owen, 2001, p. 399). Owen (2001)
suggests that the selection of the best structural approach is dependent "upon
variable factors in the context of the situation" (p. 399). A wide variety of
combinations for organizing are potentially correct for use, and the selection
must meet the needs within the context of the moment.

There are generally two distinct organizational structural systems available for
consideration:

1. The "mechanistic" system of structure is autocratic and allows
   centralized or formal hierarchical control for environments that
   are stable (Burns & Stalker, 1961, in Limerick et al., 1998).
2. The "organic" system allows flexibility in the structure for use
   when the environment is unstable or changing. A network or

group structure positions the people as the priority (Burns &
Stalker, 1961, in Limerick et al., 1998).

The organic system of organization presents a potential advantage in a
contemporary change-based environment (Hout, 1999).

The open style of organization creates a system that is loosely coupled
(Limerick et al., 1998; Weick, 1979, 1995). A loosely coupled unit (or cells)
can form a variety of unique structures (Emery & Trust, 1973; Weick, 1979).
The options include loosely coupled units for an organization of an infinite
number of ways to connect the units into a structure that is "self-designing"
(Emery & Trist, 1973; Hout, 1999). The design selected "should be *contingent*
on the degree of change or stability in the environment of the organization"
(Burns & Stalker in Limerick et al., 1998, p. 37).

Rather than impose structural shape, a loosely coupled system, such as a chain-
link or fishnet style structure, provides a shape that is open to repeated
manipulations for continuous restructuring. Each loose coupling could be
structured uniquely to form the necessary for interconnections that are not
inflexible or imposed. This interconnected network is so valuable that the
network itself may determine the structure. A loosely coupled configuration
provides an advantage as it has the ability to accept ongoing manipulation and
reorganization, and this flexibility aids success in unstable times (Despres &
Chauvel, 2002).

To complete a self-designed structure one needs to complete a "diagnosis of the
nature of the environment, and then choose an organizational form appropriate
to it" (Limerick et al., 1998, p. 39). According to Lewin and Regine (2000), the
structural "organizing principle" (p. 52) is the social network. Limerick et al
(1998) stated:

    Therefore, people have to organize themselves. This means that the
    Emphasis has to be on the people themselves (jobs cannot be defined

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with any precision) and have to be located in flexible group structures
where they can adapt and coordinate. What integrates them in such a
structure are not the commands of a superior, but shared norms, beliefs, and
values" (p. 38).

Developing a practiced ability to self-design a structure for the times is
advantageous.

At this point in the model, after research participants learn about complexity
theory and contingency theory, instructors could move to Steps 4 and 5 of the
CIM.

Instructors now moved

from the cognitive knowledge cycle of understanding and

perspectives about change

to the

construction of personalized knowledge

for change and pedagogical use.

5.8.4.4 The Change Infusion Model

STEP 4:

Rethink Pedagogy: Explore Your Personal Views on How Theories of Change Can Be Utilized to Change Your Pedagogy.

Synopsis: The fourth step in the CIM requires an instructor to complete a conceptual exploration of theories of change in combination with pedagogy. A conceptual exploration includes:

- A conscious effort to determine a relationship between key characteristics from theories of change and their potential for infusion into pedagogy.
- A conceptual examination of possibilities and arising issues if one infuses key characteristics from theories of change into pedagogy.

The objective of a conceptual exploration is to rethink pedagogy to stimulate an understanding of the relationship between the theories and practice. The foundations of the exploration utilize: (a) the condition of contemporary change as normal--from step 1 the CIM, (b) the use of a personal perspective on change developed in step 2 in the CIM, and (c) key characteristics extrapolated from theories of change during step 3 in the CIM. Instructors then consider the question: Can any of the key characteristics comprised within theories of change be infused within pedagogy to frame one's instructional and learning strategies?

Further Description: The fourth CIM step is a conceptual exploration that encourages the selection of key characteristics from theories of change and the determination of their use in pedagogy. One exploration strategy is to conceptually explore one key characteristic at a time. The potential to express the key characteristic and the impact of the infusion, along with the subsequent

issues are investigated as they related to one's instructional and/or learning strategies. This process encourages instructors to conceptually develop scenarios as one considers the ability of the key characteristics to influence instructional and learning strategies. Step 4 in the CIM encourages a discovery of innovative options for a pedagogy infused with key characteristics from theories of change.

A conceptual exploration aids the developing questions to guide the process. Topics for the questions include: (a) the context, (b) the consequences, (c) the mechanism for managing the infused change (e.g., the transitional and sequencing requirements), (d) the outcomes from predictions, (e) the arising issues (e.g., relationship and system changes), and (f) the efforts to complete the conceptual exploration.

The conceptual exploration in the CIM had no right or wrong answers. An exploration aims to assist instructors to develop awareness and orientation for infusing key characteristics of theories of change within pedagogy. The use of one's learning and instructional strategies in the conceptual exploration provides a context that aids in development of an understanding about the effects of change infusion.

The aim of the conceptual exploration is to follow Hout's (1999) statement that one "allow their strategies to emerge out of current conditions" (p. 5). The exploration aims to develop understandings options, conditions, and consequences when one completes change infusion. This includes the identification of transitions, boundaries, and one's capacity for pedagogical change.

The exploration includes "seeing how things work [and] can be combined to good effect" (Campbell & Gregor, 2002, p. 13). According to Beeth (1995), the "plausibility of a…conception [is] not a necessary precursor to conceptual

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change" (p. 10). An exploration encourages instructors to develop an understanding that one could create, adapt, and manoeuvre (Handy, 1997) pedagogy for the times.

5.8.4.5 The Change Infusion Model

 *S*TEP 5:

Explore Implications for Adapting Pedagogy For Postindustrial Change: Apply Key Characteristics You Choose from Theories of Change to Your Pedagogy To Adapt It For Postindustrial Change.

Synopsis: Step 5 in the CIM includes the conceptual application of key characteristics of theories of change within pedagogy. This step aims to utilize key characteristics of change to create a pedagogy designed for contemporary change-based times. The aim of this step is to broaden one's conception of, and use of, key characteristics from theories of change in pedagogical practice. This step conceptually applies the ideas explored in step 4 for a personalized pedagogy adapted for contemporary change-based times. Once a conceptual implementation of key characteristics from theories of change is made, pedagogy for contemporary change is potentially created for use in practice.

Step 5 in the CIM does not promote one right answer. The potential outcome of the implementation of the five steps in the CIM is a personally pedagogy that is permeating with key characteristics from theories of change for use in practice to frame the instructor's instructional and learning strategies.

Further Description: The fifth step in the CIM applies theories of change within one's conceptually held pedagogy. This means an instructor re-conceptualizes a learning and/or instructional strategy to express the

characteristic within pedagogy. It is not possible to provide the exact process for infusing change characteristics into pedagogy. Instructors construct the means to express the characteristic of change within pedagogy. Coulson-Thomas (2002) and Dyer-Harris and Zeisler (2002) promote a belief that individuals have the potential to personally create a guided process to manage activities in contemporary postindustrial change-based times. A personally selected process aids instructors to construct knowledge in the area of an application of key characteristics from theories of change into pedagogy.

To aid in the development of a guided process, collaborative dialogue between instructors develops support when using the CIM. This dialogue assists to create collaborative "co-investigators for developing together their consciousness of reality and their images of a possible, better reality" (Walker & Soltis, 1997, p. 62). An exchange of ideas assists with the application of key characteristics and pedagogical options for contemporary times and aids in a "degree of creativity and flexibility" (Walker & Soltis, p. 41). The outlook is to develop competency-building strategies for rethinking held positions with respect to instruction and learning strategies for contemporary times.

Step 5 looks to determine boundaries and tolerance for a conceptual application of change characteristics within pedagogy. In the end, whatever the response for the development of a conceptually held pedagogy for postindustrial change-based times, it is "*their* response and it stands as a marker of where they are now and where they have been in the world" (Campbell & Gregor, 2002, p. 24). The individual instructor makes the final determination concerning the application of change characteristics in pedagogy. Overall, Step 5 in the CIM stimulates the application of key characteristics from theories of change in pedagogy. This step looks to apply understandings, innovations, and insights for a contemporary pedagogy.

5.8.5 Research Question 3 -- Conclusions

Data from a survey at an international conference encourages the researcher to continue work on the model. The feedback from 3 stages of trials aids to refine the preliminary CIM. A synopsis of the refinements made to the CIM includes the following:

A stage 2 trial suggestion is that the CIM steps be within cycles. Consequently, the model structure consisting of 5 steps are no longer linear steps but two continuous cycles. This adaptation of the model makes the CIM open to the emergent nature of change as the two cycles laid the foundations for openness to the changing needs of individuals using the model. The changing needs include the time one requires in each cycle to learn the model and to develop knowledge about change and the ability to personally select the timing to move from one cycle to the other.

The trial findings reveal two procedural issues when learning the model. The procedural issues include a communication method to aid learning the pedagogical use of the model and a phased-in pedagogical approach is practical when utilizing the model in practice.

The study recommends the use of a collaborative meeting method when using the model. A collaborative meeting method in the stage 2 and 3 trials allows research participants to discuss and reflect on the CIM and its use in practice while learning to use the model. The two subsequent stages of trials develop an awareness and understanding of the CIM as a pedagogical strategy.

This study recommends a phased-in approach for implementing the pedagogical options from the CIM. The trial findings reveal workload issues in academic work life when using the CIM and making the model impractical if applied to multiple instructional and learning strategies all at once. A phased-in approach aids to mange the increase in workload that arose when using a change model.

Numerous refinements to the participant information package are from interpretations of the findings from the guided records and collaborative discourse. The refinements enhance the package after each stage of trials.

An analysis of the stage 1 trial data reveals changes to the participant information package. The first suggestion includes the adaptation of the information on the flexibility effects for understanding, clarity. The second suggestion is the addition of summary statements for each CIM step. The stage 1 suggest refinements are made prior to the stage 2 trials.

An analysis of the stage 2 trial data reveals additional adaptations necessary for the participant information package for the stage 3 trials. The adaptations include the addition of an explanation that provides a context for the model, a figure or diagram of the model as an overall summary statement, and graphics for each step to aid research participants to remember them. In addition, the language necessitates the removal of the term "the" prior to descriptions, and the term flexibility effect is made plural. Next, the relationship between the cognitive and constructive steps is a ratio. The ratio is 3:2 ratio, or 3 cognitive steps to 2 constructive steps.

Two trial findings are not approved and in the participant information package. The suggestion that the time for an engagement with the CIM (one academic semester) be increased and the suggestion that the distribution of the model material be adapted were not instituted. The suggestions are personal preferences that may not be seen as advantageous by others. After consultation with the Research Committee, changes to these two elements were not made as they needed to remain consistent throughout the research.

An analysis of the stage 3 trial data reveals further adaptations for the CIM participant information package. The stage 3 trial research participants indicate

that there were too many theories in the participant information package for learning to use the CIM. There is no one correct theory of change available for use. This is because one change theory did not encompass all of the elements of change. As Hatch (1998) emphatically states, "there never will be a definitive theory of change. It [is] a theoretical and empirical impossibility to generate a theory that applies to all situations" (p. 35). The criterion for selecting a theory of change for use in the CIM is that the theory is "actually happening and the trend will shape the future environment" (Zack, 2002, p. 260). The CIM participant information package provides samples of theories of change for use when learning the model. The package now introduces only two theories of change--complexity theory and contingency theory. This change represents a reduction of three theories. All members of the stage 3 trials indicate the use of two common contemporary theories is an appropriate number of theories to present with the CIM.

Stage 3 changes refine the CIM participant package in this dissertation for future use of the model. These suggestions include the use of different communication vehicles with the model. The communication methods include weekly e-mails and on-line chats to discuss learning and the CIM. In addition, a longer time period beyond the one academic semester of time could be used to learn to use the CIM. The refined CIM is presented above in this chapter.

5.9 Conclusion -- Change Pedagogy (or C-Pedagogy) as a New Paradigm

After considerable time reflecting on the overall outcomes of the model, the realization is apparent that the CIM is within tertiary pedagogy in an area that the researcher now calls change pedagogy (c-pedagogy). This area is not developing a curriculum for teaching about change, but developing pedagogical structural processes that encourages learning for change. C-pedagogy aims to move beyond teaching strategies about change, including the use of scenarios about change. C-pedagogy aims to create a context or environment of change in

the classroom—simulating real-world change. A context of change in the classroom provides an environment that stimulates learning for change.

The CIM is one component in the primary stages of c-pedagogy. The CIM is an innovative experimental model that guides instructors to adapt pedagogy for contemporary change-based times. During this inquiry, research participants' suggestions frame the adaptation to the preliminary CIM to move to model to a refined state and to improve the participant information package outlining the model.. The CIM is a strategy for adapting pedagogy for the times. However, the CIM trials reveal that more than simple refinements to the model are necessary to aid the adaptation of pedagogy for contemporary times.

Refining the CIM is not enough to advance learning for change. Simultaneous development of the educational system needs to aid the utilization of the CIM and any other pedagogical strategies for change learning. The educational system needs to institute a movement to support educators in emergent practice. This includes advances to aid educators to work through work-life tensions and paradoxes in emergent practice.

The journey of discovery is an intertwined process. The development of pedagogy for contemporary times is interlinked with the realities of educational practice. The application of contemporary tertiary advances in educational institutions aid the ability of educators to adapt pedagogy for the times, and ultimately affect the efficacy of the CIM. This conclusion follows Fullans' (1993) suggestion that a dual approach is needed for advancing the educator and the educational system to work in unison.

CHAPTER 6: CONCLUSIONS

6.1   Introduction

This inquiry is an investigation that concerns the Research Problem: *In what way(s) and to what extent can University instructors incorporate theories of change in their pedagogical practices through the application of a conceptual framework?* In response to this problem, a preliminary model that arises from analyses of the literature was presented in Chapter 2. In addition research methods including the six research questions that guided the inquiry were described in Chapter 3. The findings from a survey conducted at an international conference presentation on the CIM and research trials conducted in three stages were outlined in Chapter 4 and discussed in Chapter 5. Overall, four outcomes and three recommendations advance from the inquiry. The outcomes and their significance, along with the recommendations, are in the discussion below.

6.2 Reflections on Outcomes and Implications of the Inquiry

The four outcomes from this inquiry and their significance include:

Inquiry Outcome #1: The initial outcome from his inquiry provides a response to the Research Problem: *In what way(s) and to what extent can University instructors incorporate theories of change in their pedagogical practices through the application of a conceptual framework?*

A conceptual framework for a model (the Change Infusion Model) is the method that guides instructors to incorporate theories of change within pedagogy. The theoretical framework for the model emerges from analyses of the authoritative literature and the model goes through a process of refinement with the use of research trials. The refined model in Chapter 5 promotes pedagogy that aims to build instructor awareness and orientation for infusing key characteristics from contemporary theories of change into pedagogy for

practical use. The infusion process in the model is an adaptation of Gay's (1995) four sequential stages of infusion. The model encourages practitioners to reconstruct pedagogy to create a context or an environment of change within the classroom that stimulates real-world change that occurs outside the classroom.

The design of the model contributes a method to aid educators' to train to adapt to the postindustrial world. During the inquiry, the CIM changes the research participants' awareness of pedagogical options. Some research participants indicate that the CIM is in their consciousness. This means that the CIM alters the research participants' consciousness of pedagogy for the times. This consciousness is achieved even if research participants determine the option is viable or is not viable for use in practice.

Philosophically instructors indicate that they could adapt pedagogy to integrate theories of change. However, when completing adaptations in pedagogy impediments are realities. The impediments are discussed in outcome #2 below.

The inquiry reveals that research participants rank the model as generally satisfactory, with 2 research participants being undecided on the model. However, the orientation to utilize the model in practice is only a verbal stance from some research participants. The revelation of the actual use of the model in the future practice of the research participants is not available within the limitations of this research study and needs to be obtained in future studies.

The Significance of Outcome #1: The significance of the CIM stems from the rise of an innovative pedagogical option that moves beyond teaching *about change* to encouraging insights *for change*. The model provides a tool that connects the instructor and the classroom with the world of change-based times. The CIM is designed to advance learning during an era of historical change that demands active and continuous learning (Hirschhorn, 1984; Sproull & Kisler,

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1991). The learning significantly offers an option that concerns adapting pedagogy for contemporary times.

Inquiry Outcome #2: The second outcome of this inquiry includes the research participants' perspectives or insights on adapting pedagogy for the times. The participant opinions and reflections reveal realities and impediments for adapting pedagogy for the times. Research participants' opinions and reflections from the stage 1, 2, and 3 guided records and stage 2 and 3 collaborative discourse data is in Chapter 4 and the discussion is in Chapter 5. It is important to note that the research participants' perspectives or insights on adapting pedagogy during the 3-stage trials are based on a limited context and therefore a broad application of the findings is limited.

The participant perspectives reveal that the adaptation of pedagogy in response to postindustrial change is a philosophical paradox rife with tensions. The research participants' philosophically agree that one could adapt pedagogically for the times; however, to adapt, one has to negotiate through an environment whereby the correct amount of infusion of theories of change and the most successful direction for adapting pedagogy for the times is an unknown. In addition, one risks failure or a time-consuming process of stops and starts in a potentially undesirable pedagogical direction. Also, tensions stem from a variety of sources such as time issues, workload issues, and a lack of support from the institution when one uses a change model. In the end, pedagogy for the times potentially results in an initial decline in success. Overall, the participant perspectives conclude that adapting pedagogy has implications for the academic work life of an instructor.

Philosophically, this researcher supports a belief that risk is inherent in the development of pedagogy and a lifelong process of learning required one to take risks. However, in practice, the risks taken to adapt pedagogy and work through the paradoxes and tensions may negatively impact one's academic

work life. To reduce or contain the risks when using a change model such as the CIM, the research participants suggest a phased-in implementation process. Thus, the CIM is not a tool that is for use with all of one's instructional and learning strategies at once. A phased-in implementation process allows time to work through the realities of paradoxes, tensions, and stresses inherent when rethinking pedagogy.

The Significance of Outcome #2: The trials contribute insights concerning academic life and the stresses of adapting pedagogy for the times. The trials offer understandings that are part of a continuous search for knowledge that concerns educators, pedagogy, and the times. The trials produce understandings concerning the use of the CIM in a phased-in manner and are not to be used to frame all higher education instructional and learning strategies at once. This knowledge contributes significantly to instructors considering using the model in practice and to the body of knowledge for the educational community on adapting pedagogy for the times.

Inquiry Outcome #3: The third outcome from this inquiry is that educational institutions need to move to support the needs of educators in emergent practice. There is a need for advances in institutional tertiary pedagogy that support educators learning for contemporary change. The advances necessary include an effort to aid the utilization of the knowledge and pedagogical strategies for change-based times. Advances in the area of support are necessary to aid educators working through the realities of paradoxes, tensions, and stresses in emergent practice. The journey of pedagogical discovery is an intertwined one between the educator and the educational institution.

Significance of Outcome #3: The significance of this third outcome is the revelation that educators and educational institutions need to be more collaborative in the struggle to advance pedagogical learning for contemporary times. Teaming the effort of pedagogical design experimentation and support

for the development of tertiary practices for contemporary times is seen as necessary for the advancement of learning. This is a significant statement for sharing, discussing, and consideration by the educational community.

Inquiry Outcome #4: The fourth outcome from this inquiry is the emergence of a new paradigm. After considerable time reflecting on the overall outcomes of the model, the researcher realizes that the CIM is situated within tertiary pedagogy in an area that concentrates on pedagogy specifically for change. The researcher initially raises this idea in Chapter 5 and names this paradigm change pedagogy or c-pedagogy. Change pedagogy is not a curriculum for teaching about change, but a pedagogical strategy to create a context of contemporary change in the classroom. The aim of c-pedagogy is to move beyond teaching about change and using scenarios about change, to creating a context that encourages learning for change.

The Significance of Outcome #4: The significance of this new change pedagogical paradigm begins with the realization that a new branch of theories and strategies can be developed for adapting pedagogy for contemporary times. One component of this new paradigm is the use of theories of change infused within pedagogy. This emerging paradigm creates new discourse (Prawat & Floden, 1994) on infusion and other pedagogical strategies for creating a context of change in the classroom. In addition, there is the possibility that research on the reconstruction of pedagogy for contemporary times with new frameworks in change pedagogy may be advanced with further experimentation.

6.2.1 Summary -- Outcomes and Implications of the Inquiry

There are four outcomes from this inquiry. The outcomes are significant as they (a) produce a CIM that guides instructors to incorporate change-based concepts in their pedagogical practices, (b) presents insights and learning on paradoxes, tensions, and stresses when adapting pedagogy for the times, (c) reveals that educational institutions need to move to support the needs of educators in emergent practice, and (d) present the emergence of a new paradigm as change pedagogy (or c-pedagogy).

Responses expressed in the participant records in the trials are accepted as "a marker of where [research participants] are now and where they have been in the world" (Campbell & Gregor, 2002, p. 24). The trial responses indicate that the research participants understand the CIM and generally deem the model acceptable for practical use within the parameters of a phased-in process.

Overall, the rethinking of pedagogy for contemporary times with the CIM looks to reveal opportunities. The opportunities include the development of new perspectives, knowledge, and pedagogical options. However, research participants indicate that adapting pedagogically for contemporary times is a challenge.

6.3 Recommendations for Future Research

Three recommendations are advanced from this inquiry for future research in the area pedagogy and infusing theories of change within pedagogy. The recommendations for further study follow the statement from English and Baker (2006) for organizations to

> Experiment and settle on a portfolio of other legal intelligence-gathering methodologies. This requires searching for, locating, and mining all sorts of one-time and ongoing sources of rich, insightful, valuable, and recent best practices knowledge that can be acted on (p. 48).

The call by English and Baker for experimentation is applicable to educational institutions and educators and underlies the following three recommendations:

Recommendation 1:

A concentration of research is needed in the area of the relationship between theories of change and pedagogy. Current work has not expressed full understandings on the connections between the use of theories of change and pedagogy for postindustrial times. Additional design experiments specifically on the infusion of change in pedagogy are needed to advance learning and pedagogical options.

Recommendation 2:

The next step in the development of the CIM is the testing of the model in the classroom to determine if the CIM meets the criteria of an "authentic pedagogy" as established by Newmann, Secada, and Wehlage (1995). This next inquiry includes determining the impact of the composition of pedagogy distinctly designed for the real world of change.

Recommendation 3:

Additional design experiments for innovative pedagogical options are needed to continue to advance learning in change pedagogy for our unfolding contemporary change-based times. Additional design experiments are part of a process of continuous learning for the advancement of change pedagogy for the times.

6.4 Final Reflections on the CIM as a Component of Tertiary Pedagogy

This research is situated within contemporary tertiary pedagogy and utilizes a perspective that an experimental approach is appropriate in an attempt to advance learning. This experimental approach for rethinking pedagogy encompasses a belief that one's pedagogical design remains forever unfinished in nature, "replete with possibilities, that grow out of particular engagements"

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(Giroux, 1992, p. 4). An underlying premise is that once an instructor personally rethinks pedagogy, the "Copenhagen Interpretation" (Heisenberg, 1958; Pashler, 1998) comes into play. As such, we cannot go back to the state of not being aware of the dynamic forces of change; it becomes part of one's consciousness. This interpretation indicates that an instructor "cannot stand apart from what they know and what they learn about the world. This is because… they enact the world they inhabit and know about" (Campbell & Gregor, 2002, p. 23).

Involvement with the CIM alters the research participants' conceptual construction of options for pedagogical practice. Even if instructors find it difficult to make concrete changes to their practice with the CIM, there is no denying the awareness for change and the participant is forever changed due to the interaction. This interaction is part of a lifelong journey in pedagogical professional development.

The CIM impacts the research participants by entering a pedagogical option within their consciousness. The CIM also impacts this researcher. The impact includes (a) an appreciation for personal knowledge differentiation and its value in postindustrial change-based times, (b) a professional development opportunity in concert with other instructors for a better understanding of the researcher's personal pedagogy (albeit still a limited understanding), (c) an understanding of the continuous need to learn about a variety of contemporary theories of change, and (d) guidance for adapting personal instructional and learning practices for postindustrial change-based times.

The impact of this doctoral dissertation leads to a key insight that an easy way to reconstruct one's pedagogy was elusive. Constructivism requires reflective work and the critical examination of options for practice. Currently, there is no way around this time-consuming element of reflection, rethinking, and reconstruction. The doctoral courses, readings, research, and insights bring this

researcher to the conclusion that advancing pedagogy for postindustrial times requires continuous effort over the course of time. The opportunity is before us to put forth this continuous effort to create advances that mark our place in postindustrial times. To do so, we must take pedagogical risks. Yet, while completing this dissertation, the realization that it is very difficult for educators to participate in research arises as their involvement adds to their heavy workload in academic life.

Overall, this research on adapting pedagogy for contemporary postindustrial times is significant as one component in an overall process in the development of change pedagogy. The refined CIM is far from fully meeting the needs of educators in contemporary times. A continuous research program is necessary to learn more about the model in practice and to develop other options in change pedagogy.

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Appendices

APPENDIX A

**A DESIGN AND METHODOLOGY CHART FOR
COLLECTING DATA REGARDING RESEARCH
PARTICIPANTS' IMPLEMENTATION OF THE
PRINCIPLES OF THE CHANGE INFUSION MODEL**

(referred to as: The Data Collection Chart)

A Design and Methodology Chart for Collecting Data Regarding Research Participants' Implementation of the Principles of the Change Infusion Model

(referred to as: The Data Collection Chart)

Meeting Objectives	Key Concepts & Meeting Content	Questions/Statements to be Addressed
Collaborative Meeting #1 Objectives: To introduce the research participants to the research topic and to obtain the consent of the research participants to participate in this study that looks at the change infusion model as a pedagogical response to contemporary change-based times.	**Change infusion model information session** 1. Introductions – (between researcher & research participants. 2. Researcher provides a quick overview of the study and proof of the research Ethics approval to the research participants. 3. Researcher poses questions to the research participants (see questions in right hand column). 4. The researcher explains the research concept (see explanation in right hand column). 5. Researcher distributes the CIM information package. 6. Researcher provides a verbal review of the contents in the CIM information package including a review of: - the context of a change-based environment in which we live and work - the change infusion model process (and examples) - the participant requirements for research participation - the learning theories underscoring the	The researcher poses the following questions for discussion: • *What do you know about change?* • *Do you take any steps to allow for or to account for change in any of your current courses? If so, please explain how.* • *How are we as instructors learning to accommodate change? For example, the impact of technology has changed the way we do things... has technology changed your teaching? Can you identify other change forces? How do they impact your teaching?* • *Would you like to learn more about change and its potential impact for you as an instructor?* If the research participants agree… the researcher continues. *The research concept:* I have developed a model that you can potentially put in your tool box. I call it the change infusion model. This model provides some knowledge about change. This includes information on theories of change (including complexity theory, contingency theory). Then the model process encourages a rethinking of your pedagogy and the development of knowledge for change. This includes a process of conceptually exploring and applying key characteristics/elements from theories of change to your pedagogy (the conceptually held basic organizing principles that frame your instructional and learning strategies). Overall, the model process aims to guide you beyond using theories of change as a teaching strategy (or simply teaching about change) to a pedagogical strategy (building theories of change within the pedagogy with the aim of developing insights – or understanding—for change). In the end, each instructor determines if infusion (or intertwining) of key characteristics

	research	comprised within theories of change in pedagogy is right for them.
	- a definition of pedagogy (see definition at end of this data collection chart) - the researcher contact information. 7. Research participants question & answer period. 8. Researcher obtains the endorsement of the research participants to participate in the research (participants sign an agreement indicating their interest in learning and engaging with the change infusion model). Note: if participant decides not to participate, they are thanked for their time and can depart—they are no longer included in the research (participant package to be returned to the researcher). 9. The next collaborative meeting date is established/confirmed with the participants.	Can infusion create a relationship that provides a bridge between pedagogy and what is happening in our environment of change in which we live and work? This research offers participants (the agents of change) a professional development opportunity that concentrates on instructors and their pedagogy (not on the students). *Question concerning research participants agreement:* Now that you know something about what the proposed research is about, do you agree to participate?
Collaborative Meeting #2 Objectives: To advance the understanding that change should be expected in the environment in which we work and live. To encourage consideration of the concept that contemporary theories	**Step 1 and Step 2 of the change infusion model are introduced.** 1. The research participants are asked a 1st set of questions (see questions in right-hand column). 2. The researcher then introduces the change infusion model **Step 1: Confront pedagogical complexity: Agree to**	*1st Set of Questions:* *Do you currently include teaching about change in your course? If so, what theories about change or concepts do you emphasize?* *How do you attempt to ensure that change concepts are incorporated into your teaching?* *Do you currently create your own approach to instruction and pedagogy (a constructivist approach)?* 2nd Set of Questions:

about change and forces of change can be infused within an instructor's pedagogical design for practical use. To advance the concept that accepting and nurturing one's flexibility effects (personally developed differentiated knowledge) may be an advantage in a change-based environment and aid in the formulation of options for a pedagogy in change-based times.	**consider infusing key characteristics comprised within theories of change within one's pedagogy as a potential pedagogical response to contemporary change-based times that are creating a fundamentally new environment—for work and life.** - the researcher reviews the information package material established for this step (found in the participant information package). 3. The researcher introduces the change infusion model **Step 2: Personalize change knowledge: Value differentiated knowledge for potential advantage – called "flexibility effects"** - in this work your own personal opinions and perceptions are seen as valuable. - this work encourages each participant to develop their own perceptions about and for change as a potential advantage in change-based times. - differentiated knowledge or individualized knowledge ("flexibility effects") provides a potential advantage. - the research participants review the information package material established for this step (found in the participant information package). 4. The researcher asks a second set of questions	• *Now that you know the initial steps in the change infusion model, do you agree to continue to participate?* *And* • *How do you feel about (a) the premise of the condition of change as a common, normal environmental element, (b) including theories of change in your course, and (c) accepting and nurturing your own perceptions and opinions concerning change?*

	(see right-hand column). If participant responds negatively to continuing with the research, then the participant(s) are thanked and are no longer part of the research-participant package is to be returned to the researcher). 5. Next meeting time and topic confirmed with research participants.	
Collaborative Meeting #3 Objectives: To assist instructors to develop a foundational base of understanding about change by providing participant information on theories of change for use with the change infusion model. To encourage instructors to engage with theories of change and determining the key characteristics comprised within the theories.	**Steps 1 & 2 are discussed & Sep 3 of the change infusion model is introduced** 1. Researcher leads a review and discussion on Steps 1 & 2 of the change infusion model. 2. The researcher introduces the change infusion model **Step 3: Develop an understanding of theories of change.** - the emphasis is on the instructor (not the students). - research participants review the information package established for this step (found in the participant information package). - the researcher also refers the research participants to the synopsis of theories of change at the end of this data collection chart). - the research participants are asked to intertwine theories of change within their current course (in the content, examples, at sites that are deemed	

	appropriate by the change infusion model participant). - researcher explains that this is a teaching strategy about change and the knowledge from this exercise will potentially aid in determining the key characteristics comprised within the theories of change for use in step 4 and 5 of the change infusion model. 3. Next meeting time and topic confirmed with participants.	
Collaborative Meeting #4 Objectives: To stimulate a conscious effort by instructors to determine the relationship between theories of change and pedagogy. To encourage the development of one's knowledge for change by conceptually examining key characteristics comprised within theories of change, and the potential for infusing the characteristics in pedagogical practice, and arising issues in infusion. To encourage a collaborative exchange on the conceptual rethinking of pedagogy.	**Step 3 is discussed and Steps 4 & 5 of the change infusion model are introduced** 1. Researcher leads review and discussion on Step 3 of the change infusion model. 2. Researcher poses the questions listed in the right-hand column. 3. The researcher introduces the change infusion model **Step 4: Explore personal perspectives on key characteristics comprised within theories of change and pedagogy – Rethink pedagogy utilizing selected characteristics** For example: conceptually explore how the key elements of complexity theory could change your pedagogical design if applied to one's instructional and learning strategies. - researcher guides participants in a review	• *What is your comfort level for taking risk in life? High 1 – 2 – 3 – 4 – 5 Low Provide an example indicating when, how, and the amount of risk your are willing to take.* *Now relate this to your willingness to take risks in your teaching/classroom activities.* • *What makes you a good instructor and what makes you different from other instructors?* • *What instructional and learning strategies do you use and why?* • *State a critical incident that has had an impact on you as a teacher. Then state how this incident influences your pedagogy (the organizing principles that makes up the design that frames your instructional and learning strategies).* • *If you could relate your pedagogy to a song- what song would it be?*

	of the participant information package material established for this step (found in the participant information package). - researcher provides examples of conceptual exploration. 4. The researcher then introduces the change infusion model **Step 5: Explore implications for adopting a pedagogy for contemporary postindustrial change: Apply key characteristics/elements comprised within theories of change for a pedagogy infused with tenants of change** - researcher guides participants in a review of the information package material established for this step (found in the participant information package). - researcher provides examples of conceptual application. 5. Researcher asks participants to continue the conceptual exploration process and attend the next meeting to discuss the learning. 6. Next meeting time and topic confirmed with participants.	
Collaborative Meeting #5 Objectives: To apply selected key	**Change infusion model Steps 4 & 5 reviewed and request guided record** 1. Researcher leads a	• *How do you feel about the development of the change infusion model concept with the steps we went through, the participant information package and the collaborative meeting opportunities* • *Tell me about the ability to implement the conceptually applied options you*

characteristics from theories of change to one's pedagogical design--infusing theory into practice.	review and discussion on Steps 4 and 5 of the change infusion model. - researcher leads a discussion on the participants' conceptually explored and applied options for infusing theories about change and forces of change into one's pedagogy. 2. Researcher poses questions (listed in right-hand column). 3. The researcher then reviews the guided record questions & requests written submission by research participants (to be submitted within 2 weeks of the completion of this collaborative meeting). Participants are shown where the guided record reflective statements are in the participant package for reference. - participants are thanked.	*developed with the change infusion model.* - *Were the options developed with the change infusion model of value to you? (Why/Why not?)* - *Would the implementation of the change infusion model require you to make adjustments in your course goals/objectives?* *If yes, describe the modifications required. If no, state how the model does not fit the goals.* - *What support do you think would be needed from the institution in order to implement the change infusion model? How can the support potentially be provided?* - *What obstacles do you foresee for implementing the change infusion model?* - *If you implemented the change infusion model how would it affect your academic activities?* - *Now that you know what you know about the CIM, how might it impact your practice in the future?* **Guided Record Reflective Statements:** 1. Please comment on the overall change infusion model concept. 2. Please comment on the collaborative meetings held to discuss the change infusion model. 3. Please comment on the individual components within the change infusion model. 4. Please comment on the material provided to support the change infusion model (the unit overviews, instructor background notes, & examples) and determine what was most and least useful, what was missing, and what must be expanded. 5. Discuss the ease and ability to using the change infusion model. 6. Discuss the effectiveness of using the change infusion model content with the goals, objectives, and content of your higher education course. 7. Do you have any suggestions for materials that may be useful in guiding or assisting the instructor utilizing the change infusion model? 8. Provide reflective suggestions for change or adaptations to improve the change infusion model and its use. 9. Provide a satisfaction or dissatisfaction level with

		the change infusion model on a Likert scale of 1–5 with:
		
		       1-*strongly dissatisfied*;
		       2-*dissatisfied;*
		       3-*undecided;*
		       4-*satisfied*; and
		       5-*strongly satisfied*.
		
		10. Please provide a level indicating your ability to use the change infusion model in practice on a Likert scale of 1–5 with:
		
		       1-*strongly dissatisfied*;
		       2-*dissatisfied;*
		       3-*undecided;*
		       4-*satisfied*; and
		       5-*strongly satisfied*.
		
		11. Provide comments on (a) the information session and (b) the use of the change infusion model.
		12. Please feel free to comment on any aspect of this process, as you have experienced it, that has not been addressed by these questions.

The Data Collection Instrument for Obtaining the Trial Research participants' Practical Theories As They Relate to the Change Infusion Model – The Chart - *cont.*

Glossary of Terms:

Change-based Times: We are living in a period of change that has been described as a postindustrial era (Bell, 1973; Zuboff, 1988).

Change Infusion: An educational process that utilises selected key concepts from theories of change to provide a meaningful context for pedagogical practice.

Instructors: For this study, instructor or teacher is an educator at the higher education level.

Pedagogy: For this study, pedagogy refers to instructional practices established by and instructor including what an instructor conceptually conceives , organizes, or performs and encompasses numerous forms of teaching, learning and assessment strategies. Pedagogy includes the conceptually held basic organizing principles used to frame one's instructional and learning strategies. The organizing principles are made up of knowledge that one values (Bernstein, 1971) and uses to frame their practice.

Research Committee: The Research Committee consists of two supervisors for the researcher.

Synopsis of Theories:

The complexity theory: The world is complex (not chaotic). The environment is in a pivotal state (Doherty & Delener, 2001) with conditions of "uncertainty, diversity and instability" (Stacey, 1996a, p. 349). A stable state is not achievable because the "world is primarily made of dissipative structures" (Keirsey, 2003, p. 4). The structures are constantly evolving and being pulled apart and refitted by the forces and cannot be expected to be in "equilibrium" (Keirsey, p. 4). Promote the development of (a) an adaptive versatility for change and complexity, (b) a learned and practiced ability for understanding complexity, and (c) an openness to options for complexity.

The contingency theory: One system of organization cannot be found that "is superior to all others in all cases" (Owen, 2001, p. 399). Thus, organizational structure should be based on the particular environmental needs. The "mechanistic" system of structure allows for "centralised control, format and hierarchical structure… and person-to-person control" (Limerick et al., 1998, p. 38). The "organic" system of structure allows for a flexible group structure with the people in the network as the priority (Burns & Stalker, cited in Limerick et al., 1998). The organic format may present an advantage in a change-based environment (Hout, 1999) with an ability to be open to repeated manipulations and restructuring (Emery & Trist, 1973; Weick, 1979).

The Data Collection Instrument Design:
The data collection instrument follows the work by Lyotard encouraging the use of design-guiding questions that have shifted from determining truth to determining use and enhanced performance (Lyotard in Chappell, Leslie, Hermine, & Solomon, 2000). This follows an interpretative approach for design which is open to a multitude of constructed choices (Sells, 1997).

   The specific category of design theory utilized in this work is "conceptual theory" (Sells, 1997, p. 13). Sells (1997) outlines that this theory takes into account the design variables and their relationship. In this work the variables are the change theories/forces and the pedagogical design. This differs from procedural design theories as the full explanation of how to accomplish the actual change-based pedagogical design remains in the mind of the individual constructor (Sells, 1997).

   The design emphasis utilizes the "interpretative approach" (Sells, 1997) that encourages a process to uncover choices and options. Thus, the interpretative style allows for constructivist tendencies where a framework is provided for the individual to construct their knowledge. The actual construction of the advanced knowledge is left up to the individual. The interpretative style of design leaves the process open to incorporate a "creative design approach" (Rowland, Parra, & Basnet, 1994, p. 6). A creative design method encourages flexibility and situational options. Rowland et al. (1994) suggested that a movement from a linear or rational systematic design approach to a creative approach is necessary for change-based times. Rowland et al. (1994) and Reigeluth (1996) show that a movement towards creative design methodology allows for flexible, customized, and personally initiated design solutions. While this creative option is open to differentiated outcomes, it leaves the instructor to determine the process.

   Winn (1997) proposed that instructional design theory receives its foundation from the learning theory, which in turn, provides the guidance for the development of the designer's process. Although Reigeluth (1996) argued that "much of instructional design theory is no longer applicable in the current context of rapid change, global communication and high technology," (p. 14) no alternative foundation for guidance has been declared. In this work it is believed that the learning theory (in this case cognitive-constructivism) provides the foundation for one's pedagogical design.

   The engagement of reflection by instructors using the CIM is for the purpose of professional development. The definition of professional development for this research is "a dynamic process that spans one's entire career in a profession, from preparation and induction to completion and retirement" (Nicholls, 2001, p. 37). Throughout the time period, the key to

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professional development is to learn from what one has learned (Becher, 1996). In this research, the learning is self-assessed.

APPENDIX B

COPIES OF ORIGINAL GUIDED RECORD SUBMISSIONS

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From:
Date:2003/05/15 Thu PM 09:18:29 EST
To:
Subject:Infusion model feedback

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Hi Cheryl

I apologize for the extreme delay in getting this information to you. As you know
been tied up with my thesis stuff and when I spoke with you on Tuesday I thought
the validator information package with me at home, but apparently I forgot it in m
and as such only had the chance to review what was required of me late yesterday
afternoon and because I was busy preparing for my class, I didn't have the chance
you then, which brings me to this evening! Anyhow, here goes...

As per the requirements for this course, I am making the effort to infuse the concep
change to the students enrolled in the spring offering of SPMA 3P21. I am doing:
number of ways:

- First, I noted in the course syllabus that "openness and flexibility to advanci
  change conditions...and strategies for managing/leading through changing
  environments" are primary objectives for students to get out of this course.
- Secondly, I have incorporated a daily quote to start off each and every class
  promote discussion around the nature / content / subject matter of the quote
  date, I have introduced that "equilibrium is a precursor to death" (Pascale, 1!
  from which a discussion ensued about how "complex, dynamic and unpredic
  environments are normal" (Fullan, 1993, p.20), as well as a discussion abou
  "flexibility effect" and how future sport managers/leaders must ignore stabil
  foster a work environment that elicits, supports and nurtures creativity by
  deliberately upsetting the status quo.

This is as far as I've gotten so far. My plan this week is to introduce Chaos/Compl
Theory in my daily quote for Monday and then follow up with the other two steps
subsequent weeks.

As I'm sure you're already aware, given the theoretical framework that I was broug
with as a result of my Master's work at Windsor, most of this information is famili
and it was quite easy to compliment my research with that which is supplied in the
Validator package. While I usually introduce these topics in one or two classes ov
course of the semester, being involved in this study has me adjusting my teaching
bit to ensure that the concept of change is something that is continually reinforced

http://getemail.sympatico.ca/cgi-bin/gx.cgi/AppLogic+mobmain?msgvw=INBOXMN382...   5/17/2003

week of the semester.

To date, I don't really have much constructive feedback to provide. I like how the validator package is broken down - providing an easy reference for instructors to r in infusing change into their courses. I think that it would be beneficial to include information on the flexibility effect as this areas seems to be a little bit weaker tha: others in terms of providing practical means for being flexible in the change-based environment. I will keep you posted on the other sections as I embark upon them. I really like using the "quote of the day" to introduce these various infusion topics! this right at the beginning of class also ensures that the students are fresh and perh more apt to appreciate the value of change. This is something that might be worth recommending to other instructors as it provides the opportunity for the instructor integrate the information into the course, even for those subject matters that might themselves as easily to the concept of change. Just a thought!

So far so good! On the Likert scale, I give the validator package a grade of 4 - sati (only because of the lack of information on the flexibility affect - if more informat available for the instructor on this topic I would have given it a 5). I hope this hel try to send you updates on a more regular basis from hereon in. Should you requir further information in the meantime, please do not hesitate in contacting me! Hav weekend!

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X-Sender:
X-Mailer: QUALCOMM Windows Eudora Version 5.1
Date: Mon, 26 May 2003 16:13:31 -0400
To:
From:
Subject: Infusion Model Feedback

Hi

Here is my most recent update with regard to the infusion model that I am incorporating into my spring course. Last week I introduced two theories to the students (one for each class) using the quote of the day as a means for introducing the topic. First, I discussed Chaos Theory and introduced it by watching a short clip from Jurassic Park. The clip consisted of Jeff Goldbloom (who, as you may or may not recall, is a chaotition) discussing evolution with the Jurassic Park scientists and his contention that "Life finds a way". From here I broke into some brief lecture material that helps students get an idea of what Chaos theory was all about. Secondly, I discussed the theory of Dissipative Structures. This is an alternative theory that is not currently included in the validator package that might be work taking a look at? Dr. Olafson introduced me to it and it is quite relevant given the deterioration of resources in Sport Management (ie., human, financial, etc.). If you like, I can forward you some references that you can follow-up on. In each case, we discussed the theories and then related these back to some practical examples in the sporting world.

This week I only have one lecture because I will be away at the NASSM Conference. Given that I forgot to note this in my course syllabus, I'm having to cram a lot of information into tonight's lecture, so unfortunately, I will not have time to move onto stages 4 and 5 until the following week. I will send you an email once I have completed my lectures next week and let you know how things are going.

That's it for now! Take care and talk to you soon!

29/05/2003

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Subject: Change infusion model feedback

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Hi ·

I believe this will be my final feedback for you regarding my spring course
and the application of the proposed change infusion model. This week I had
two lectures, both of which provided me with the opportunity to reflect on
the impact of change on human resource management. On Monday, I started my
class with the usual quote of the day. This week's quote was from Paul
Staudohar, a sport economist, who stated that "The sports business and its
labour relations are in the midst of a transition period, the outcome of
which will have a significant impact on the future viability of professional
sports in [North] America" (1996, p.167). I found this quote to be quite
applicable as it lead into a half hour television segment from the CBC
SportsJournal which chronicled the development of labour relations in North
American professional sports over the past century. This video helped the
students in appreciating how the change in power and influence from franchise
owners to players' unions has changed the way that we perceive professional
sports. Following this short video, we had a brief discussion about where we
they saw the future of labour relations in professional sports going into the
future and what additional changes we could expect to see from the standpoint
of human resource management. Interestingly, the students proposed that we
would witness another shift in power and influence with the spectator /
client beginning to have a much greater impact on decision-making within the
realm of professional sport. This was a very interesting discussion and
something that probably would not have developed had I not been utilizing the
infusion model.

On Wednesday, I started the lecture off with yet another quote. The quote
was from Apollo 13 Astronaut Jim Lovell (1970) - "Houston, we have a
problem." From here we watched about 45 minutes of Apollo 13 (the movie) and
followed this up with a brief discussion that setup a great review discussion
for the entire course. Within this discussion we reviewed the impact that
change can have on the organization, and the human resources engaged in
producing goods and services. We reviewed the topics of chaos theory and
dissipative structures as they pertained to various aspects of the movie and

from there examined how the various 'leaders' within NASA helped their team struggle through the changes to the flight plan and the various contingency plans that were proposed and implemented over the course of the movie. Obviously, this opened the door to a review on leadership, motivation, values, abilities, personality, rewards, training & orientation, performance evaluation, etc.. This discussion proved to be a great conclusion to the course as it provided a real-life example of how people can come together as a team and thrive in times of incredible change. As one student put it very early in this discussion, upon my asking of what they just finished watching, "that was a practical application of this whole course in 45 minutes!"

Overall, I thought the change infusion model is very straightforward and easy to use, and provides a practical way of examining the topic, as change is ever-present, and worth examining more than just once in a semester. To ensure that students were retaining some of what they had been taught in class, both the mid-term and final exam had a definition and a short-answer question dedicated to change. While students were provided with a choice in each section of the exams, many chose to answer these questions due to the practical nature of the topic and the endless examples of how change can impact the management of human resources in sport organizations.

I would like to thank you for introducing this strategy to me, and while I was a little bit skeptical early on, as I got further into my course, and became more creative in my personal infusion method, I really began to enjoy taking the time out of the first 15-30 minutes (or longer in some cases) to discuss the impact of change in sport management. I only hope that other faculty members have the same success in validating your model.

Please let me know if you have any other questions or feedback on my comments above or from earlier in the semester. Take care :

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Guided Record From Research Participant S1-2

Validagtor #2
September 10, 2003

Validation Report on the Change Infusion Model   -

1.   At this point I'd say that I was quite satisfied with the way it was set up
     Generally an excellent model – can't add much more.

2.   Your research and literature review work found what was necessary to support the
     model.

3.   I think it was user friendly

4.   I think what is needed is to create a context for the instructor that takes the
     instructor from their current reality and connects them to this model and
     curriculum.

5.   Already stated.

6.   Satisfaction level = 4

7.   The only critical observation is the fact that the contextual side could be provided.
     Know who you're talking to (teachers). Give them sufficient background
     information in order that they can grasp the meaning of the model.

8.   None – it is an excellent model that should be endorsed by the educational system
     around Canada. I appreciate the work and we need more of this type of work
     going around. Teachers and administrators could learn a lot from this model.

                                                        Date: 09/12/03

Presented to: ⸱⸱⸱ ⸱ ⸱
Presented by: ⸱⸱⸱ ⸱⸱⸱

Purpose:

- To provide the researcher with an analysis of an experiential activity performed by 30 pre-service participants in the Faculty of Education, Enterprise Education Program in July of 2003.

Session Purpose:

1. To provide an interdisciplinary approach in order to identify emerging trends and opportunities in today's chaotic, complex and highly disruptive external environment.

2. To enable participants to discover the interdependence among the various fields involved in this activity (demographics, economics, environment, government, society, and technology).

3. To create stories about the future (scenarios) in order to identify opportunities and niches of possibilities.

4. To assess the current subject fields, existing curricula and methodologies in order to identify their applicability.

5. To identify alternate teaching strategies to effectively connect learning with the environment.

Methodology:

Prior to class, participants were provided with a list of the following fields: demographics, economics, environment, government, society, and technology. Each participant was asked to identify emerging trends in their specific field of study. As an example, students in the sciences would explore trends in related fields, while history students sought trends in the fields of government etc.

Classes were first introduced to *Global Scan*. Each participant was provided with a package of Post-It notes and asked to list one trend per Post-It note. After listing a multiple amount of trends, participants were asked to affix each of their identified trends on the board directly underneath the relevant category. When all trends were identified,

participants were asked to go to the boards and observe the various trends identified by all members of the class. The next step involved the clustering of these trends in order to discern patterns and key trends.

Participants were asked to reflect on a number of key questions:

1. Based on your analysis of these trends, what significant conclusions can you draw from these interrelations?

2. What's impossible to do today, that if it could be done would radically change the way you interact in the environment?

3. Based on your experiences, what do you consider the most effective strategies to be in dealing with the nature of this environment?

Participants engaged in a highly active discussion identifying a number of critical needs including:

a) Vision
b) Innovation
c) Interdependence
d) Unpredictability
e) New methods of pedagogy
f) New strategies

Participants were then introduced to the Science of Complexity and the study of complex adaptive systems. A comparison with the existing scientific method underlined the need for a new scientific paradigm that better reflects today's chaotic, complex and high disruptive global environment.

The second activity consisted of creating stories about the future (scenarios). This activity began by each participant self-organizing to create a diverse group of new members based on diversity of their teachables. Participants were then asked to create future scenarios based on their collective vision of the future, along with their knowledge and perceptions of emerging and existing trends across all fields of study.

Upon completion of this activity, participants shared their stories about the future with the class as a whole. From these experiences participants were able to draw out significant challenges and to identify emerging opportunities that would have a profound impact upon the future of their respective communities. A lengthy session was dedicated towards applications to their teachables and relevant pedagogies.

Conclusions:

The above activities infused the change-based environment within the teacher education program (Bachelor of Education, Enterprise Education), as participants were able to accomplish a number of significant achievements.

These included:

a) An increased understanding of emerging trends, their interrelationships and impact upon the individual participant.

b) Application of emerging trends on the specific subject field and its teachables.

c) Achievement of a holistic approach to the study of the subject material by creating a context for learning based on emerging scientific principles. These principles provide an effective methodology for development of a framework for analysis, synthesis and understanding of the interrelationships between these emergent forces, the learner and society as a whole.

d) Preparation of the pre-service teacher to become an 'agent of change', within their particular field of study. An agent of change is someone who actively interacts with this changing environment by keeping abreast of emerging knowledge and trends, develops learning that engages learners with their environments, and inspires people around them to actively co-create new possibilities for the system, as a whole.

-B.Ed.-03/0 -Rethinking Contemporary Pedagogy-8-03

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Change Infusion Model Validation Report

   ϽϺℯ ı
   ', Septem ·· ₋,

The guided record comments on the model and the components included the following:

Question:
1. Reflect on the overall infusion model and the individual components.

   Answer:
   - useful,
   - a bit complex for the students that I have
   - needs to be simplified with an overview page
   - overall, valuable

Question:
2. Reflect on the material provided to support the infusion model (the unit overviews, instructor background notes and scenarios) and determine what was the most and least useful, what was missing and what must be expanded.

   Answer:
   - thorough, complete and interesting
   - well researched
   - needs some summaries to make it a lighter weight

Question:
3. Discuss the ability and ease of infusing the change-based content with the goals and objectives of the course and the infusion with the current course content (the issues, conditions & suggestions) and the effectiveness of the method.

   Answer:
   - I simplified the material with an overview page and put a posed simple question: what do you think the nature of teaching reading will be like in the next 10 or so years?
   - this was a very valuable assignment and the candidates found it very useful
   - some students did not have background on the theories
   - some of the information was not in the students current range of knowledge

Question:

4. Discuss the ability to provide probing questions, deal with emerging views and to stimulate the creative conceptual process. Provide suggestions for materials that may be useful in guiding or assisting the instructor.

Answer:
- a wonderful process & topic, looking to the future is sexy
- the students like the topic
- there were no problems getting discussions going
- some discussions continued outside of class (& students reported this to me)
- the one page summary sheet worked for me
- make it simple to communicate

Question:

5. Provide reflective comments on the suggestions for change or adaptations to improve the infusion model.

Answer:
- just the summary communication link – simplify the material to a one-page overview for reference
- consider using 5 graphics and 5 summary points
- the students worked in partners and using the material it worked effectively

Question:

6. Provide the satisfaction or dissatisfaction level with the infusion model on a Likert scale of 1 – 5 with:
  1 – strongly dissatisfied
  2 – dissatisfied
  3 – undecided
  4 – satisfied
  5 – strongly satisfied

Answer:
- 4, satisfied (communication to a 1-page overview would raise the satisfaction level)
- teachers must think about what will happen in the future, they tend to be centred in the now and this was a particularly valuable exercise.

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Question:
7. Provide any additional critical observations, issues or suggestions concerning the training session and the use of the infusion model.

> *Answer:*
> - repetition of the last couple of answers

Question:
8. Open comment component
> *Answer:*
> - some graphics would help
> - keep exploring some different materials
> - develop in the future different material for different disciplines

1. Change is a constant in our world. It is linear and logical, predictable like the birth, growth and death of a person. It is also lateral, discontinuous and unpredictable. Think of the generation and ongoing effects of "SARS".

2. How we deal with change individually and as groups depends on our attitude, perception, resources and style. Being flexible and open is key to thriving in an environment of change.

3. Change theories
   - Chaos or complexity: the world is complex with many hidden potentially interconnected forces that could produce unpredictable events (eg. SARS).
   - Disorganized capitalism: capitalism due to globalization and technology is evolving into decentralized, flexible units (a car's parts and assembly drawn from all over the world).
   - Contingency theory: the view of a situation or institution is based on what particular events or context. There is no one way to understand. (school closure: school systems are like a business. Special education: with diagnosis-prescriptive approach, school is like a hospital.)
   - Virtual work. With technology, there could be no borders to work. Reading Pt. 1 on line at Brock will attract clients from Sudbury.

4. Reading instruction has gone from monoculture (all students given the same amount and type of instruction) skill-based (50's and early 60's) to student centred, learning-style driven(intuition and creativity the arbitrators of instruction) (70's and 80's) to the beginnings of data-driven, rational, science based (diagnosis leading to specific instruction based on student(s)' need focus on standards (90's to present). What will the next steps be?

5. Pick one or more of the change theories and apply them to how you think reading instruction will change. For example: on-line learning plus the potential financial bankruptcy of institutions in the United States ($400 billion deficit proposed in the States this year) could lead to the disintegration of school systems that have classrooms with students being regularly physically present. Or online learning will require increased reading/writing skills (less non-verbal communication available for constructing meaning or expression).

6. In pairs, on the paper provided, please suggest several potential scenarios regarding reading/reading instruction in the next 20 years.

Guided Record Questions

1. the overall model is a helpful way to engage in considering multiple change variables, especially in this application, + to weigh their appropriateness in terms of implementor stress, learner expectations, + learning outcomes desired.

2. most useful were the <u>discussions</u>; next were the examples. nothing here was not used - I found it all helpful + organized very clearly. sometimes the variables being considered do not lend themselves to hyper structure &/or strict timelines.

3. my ability and ease are high; the effectiveness is compromised by my relatively 'low' technological proficiency and my tendency toward expecting learners to embrace reflection + transformation with the same excitement that I do. I need to be more phased in implementation or more modest in expectations

4. phasing; assessing learner readiness; operationalizing the model's components into actual gradable assignments

5. The more aware the instructor is of her own points of resistance + what constitutes a stress, the more realistic she can be about how much to impose + with whom (eg. she becomes more aware of competing tensions)

6. (4)

7. The facilitator (Cheryl) was excellent, a co-learner as well as a facilitator. Calm, open minded, humorous, engaged.

With less time constraint, this will be an excellent & implementable model.

8. I enjoyed my cohort. We were different in how we experienced the model, yet resonant in our commitment to educating for change in the context of critical personal reflection.

Guided Record From Research Participant S2-2

a. What is your comfort level for taking risk in life? High (1) – 2 – 3 – 4 – 5 Low
   Please provide an example indicating when, how, and the amount of risk
   you are willing to take. Then, relate this to your willingness to take risks in
   your teaching/classroom activities.

b. How is your pedagogy designed to meet the current goals/objectives of your
   course?
   Please state a critical incident that has had an impact on you as a teacher.
   Then state how this incident influences your pedagogy (the design that frames
   your instructional and learning strategies).

c. If you could relate your pedagogy to a song- what song would it be?

Guided Record Questions:

1. Reflect on the overall change infusion model and the individual components.

2. Reflect on the material provided to support the change infusion model (the unit
   overviews, instructor background notes, and scenarios) and determine what was
   most and least useful, what was missing, and what must be expanded.

3. Discuss the ability, ease, and effectiveness of infusing the change infusion model
   content with the goals, objectives, and content of the higher education course.

4. Provide suggestions for materials that may be useful in guiding or assisting the
   instructor utilizing the change infusion model.

5. Provide reflective suggestions for change or adaptations to improve the change
   infusion model and its use.

6. Provide a satisfaction or dissatisfaction level with the change infusion model on a
   Likert scale of 1 – 5 with:
   - 1 – strongly dissatisfied
   - 2 – dissatisfied
   - (3) undecided — *still processing the effects of time constraint & my own health issues.*
   - 4 – satisfied
   - 5 – strongly satisfied

7. Provide any additional critical observations, issues, or suggestions concerning the training session and the use of the infusion model.

8. Open comment component–instructors to provide comments on the infusion model within any topic area not listed above.

3. The more comfortable with risk, the greater the ability + ease of infusing; the more prepared and planned / organized the course is ahead of time, the more effective the infusing. Not to be done at the last minute or midstream.

4. Longer time period; actual face to face +/or electronic simulations of model's components.

5. The context of experiencing this model was not typical, ie, the facilitator was /is under immense time constraint. This constraint was translated into a felt sense of urgency as if I had to stay on a paced or predictive time line. Experiencing the model in a more relaxed time context would be a very different + possibly more satisfying learning experience. This is not to trash the facilitator, but rather to comment on the built in constraints to learners working with a "teacher" under time constraints.

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a) Travelled around the world several times;
willing to uproot, go new places, try new things
without the "end product" or a "sure thing"
in mind.

  Similar issues in teaching — willing to try
new approaches and ideas

b) disclosure to students about my disability is
a big risk; in the past, students have used
it against me. However, honesty is more important
than playing it safe. The student responses then
force me to be adaptable & creative in other ways.

c) John Cage, 5 minutes of silence (just joking)
Anything edgy with a social/political bite
(Sting, The Police, Indigo Girls, Dave Matthews;
wild guitar riffs & Clapton; Stevie Ray Vaughan).

1. The sheer complexity of each component makes it
somewhat overwhelming to to put them all together
in a model. Each component is a model in & of itself.
Perhaps an overall "unifying" model is
a trifle ambitious, both theoretically and practically

2. Most useful — great idea exchange within the
conversations; more time needed to absorb and apply
the concepts & their interphases. Facilitator very
open to feedback.

7. Anyone using a model of this magnitude in teaching needs to plan, prepare, & phase in one component at a time; try to avoid passing on risk to students in terms of their learning & grades.

8. Sharing pedagogic strategies with other risk takers in a supportive & open minded environment was a great experience.
Acknowledging that learning & readiness does not often work on the clock. It happens when the conditions are "right" & the learners are "ready."

Stage 2 Research Trials: Research Participant 3 (S2-3)

Guided Research Questions:

1.

Q.   Reflect on the overall change infusion model and the individual components.

A.   I believe that the change infusion model is a necessary component for use in teaching within higher education course. When we view the world as is there is constant and perpetual motion with society and culture for adaptation and change, in most aspects but not necessarily in all. When you chance at history, in terms of significant events or eras, you see a steady but constant change (e.g. the transition from the Enlightenment Era to the Modern Era to the Post-Modern Era). In all cases the change was initiated from the result of questioning basis of knowledge that had existed for extensive periods of time that did not necessarily fit into the present dynamics and understanding of the people within the society and culture. It is within human nature to be curious and creative, thus people are always find ways to adapt, create and make new things, thus people must learn to change and adapt. The change infusion model provides the basis for allowing the creation of curriculum that allows the teacher to evaluate their abilities and manners of teaching in the hopes of providing students with a basis for their own success and evaluative abilities. The individual components are well laid out for the instructor to follow in guiding them through the change infusion model, in a very linear sense. Interpretation can still occur within a guided sense, but to fully create a critical transformative model numerous avenues must be present and available for the instructor to explore, creating success, failure, and learning. Alterity place the individual on trial, if one does not step out of their comfort zone one will not question, re-examine, and/or explore other options. There is more than one right answer as post-modernity depicts.

2.

Q.   Reflect on the material provided to support the change infusion model (the unit overviews, instructor background notes, & scenarios) and determine what was most and least useful, what was missing, and what must be expanded.

A.   The material provided to support the change infusion model was excellently prepared and organized in a very logical and clear progress. The material led the reader through the process in a clear organized fashion. The material was concise in that it was in-depth but not overly long, allowing the reader to follow the material while maintaining interest and focus. If the reader required more information extra sources were available to be used if necessary. The unit overviews, instructor background notes, and scenarios were all well written, easy to understand a follow. I found all aspects to be useful and I don not believe that anything was missing. In terms of expanding upon any of the areas, I would have to suggests or recommend expanding upon the scenarios. The reason for this being that if the individual involved within the student cannot not relate or understand the given scenario them may not in turn fully understand the theory or principal being discussed. Providing more scenarios in turn will enhance the readers understanding of the theory or principal. The present or new generation or teachers, instructors, and professors have great theoretical understanding but also have a great understanding of the application side of things; application is just as important as theory.

3.

Q.   Discuss the ability, ease, and effectiveness of infusing the change infusion model content with the goals, objectives, and content of the higher education course.

A.   The ability and ease of infusing the change infusion model content with the goals and, objectives, and content of the higher was smooth. As I believe that I teach from a critical a perspective were I encourage students to take in the information taught within the course and either simulate it into their papers and tests or to question what is presented and provide different perspectives that are as equally acceptable, logical, and right. As there is no true, singular right answer, these are constantly changing and expanding (this is the premise of scientific research, if there was only one answer then there would be no need to further study areas that already have an answer). It's hard to determine the effectiveness of the model as of present as the course is still presently going and will not finish until after presentations are done by the student groups. Within the course, I employed the theory of dispersed domain, as the students were required to go out into the field and develop working relationship with non-profit agencies using the material they had learnt within past courses. The students in groups were required to work on their own with little or no limitations placed upon them; they were removed from the boundaries of the everyday class room and placed into the figuratively specking "real word". I believe that a portion of the students experienced success and some that did not, overall the ability to use this material as an instructor has increased the critical understanding ability of some students. If it improves and enhances the learning of only one individual then it is deemed to me a success.

4.

Q.   Provide suggestions for materials that may be useful in guiding or assisting the instructor utilizing the change infusion model.

A.   As I am still rapping my head around the concepts and theories, one thing I believe that may help the instructor in the initial understanding and implementation of the change infusion model is the use of brief outline of the material, possibly in chart form to assist the instructor until they are familiar and knowledgeable about the material.

5.

Q.   Provide reflective suggestions for change or adaptations to improve the change infusion model and its use.

A.   I believe that if you are going to inform, teach, and have instructors use the change infusion model, then the students in the course as well should be taught the change infusion model. This should be done in terms of what it represents, the influence it has, the change that it could have, and the in-depth perspectives it could provide, in terms of critical reflection and thinking.

6.

Q.   Provide the satisfaction or dissatifaction level with the infusion model on a Likert scale.

A.   5-strongly satisfied.

7.

Q.   Provde any additional critical observations, issues, or suggestions concerning the training session and the use of the infusion model.

A.   As discussed during the session, the use of the work "the" as a definer before some of the theories may cause misconception and misunderstanding. I would try to avoid the use of the word "the" as it creates the notion that there is only one possible right answer or it creates a more definitive structured tone. As well, creating the notion that there may only be one theory or perspective when in actuality there are numerous avenues to explore or evaluate within each theory. I believe a more hands-on approach would benefit those involved in implementing the change infusion model, as I myself am a new instructor and researcher in the higher education field, some of these concepts are still new to me, and as well I am a hands-on type of person (like the applicable and theoretical material to be taught/given at roughly the same time).

8.

Q.   Open comment component.

A.   I believe that the change infusion model is representative of the change that society and culture is going through at this present time. People are being to question that already predetermined or existing evidence, methods of teaching, and stereotypical roles that have governed for many years. With the higher rate of disabilities being diagnosed within children and youth, the typical teacher or instructor can not solely rely upon old or updated teaching methods. With such a diverse population existing presently, no two individual are the same, it then goes to represent that a multifaceted approach to instructing is required. The change infusion model provides this bases for providing the instructor with a value theory, tool, and/or application to better facilitate the development of the students. The primary premise I believe in teaching is not the outcome that the students provide by *(but)* the process through which they go through (process over product). For each student begins their journey at different levels within the same course; the hope is that each student will progress along at their own pace, developing and learning as they go. When evaluating this type of model, given the present societal structure we are obsessed with outcome and product, the thing for an instructor to remember is that process can be evaluated as well, within different contexts. Why no examine where this process has led the students and instructor, not what you expect from them, as expectations vary from individual to individual.

Guided Record From Research Participant S3-1

Change Infusion Model: Guided Record Questions

1. *Please comment on the overall change infusion model concept.*

   - At the first introduction I found it caught my interest

2. *Please comment on the collaborative meetings held to discuss the change infusion model.*

   - Absolutely wonderful
   - Informative
   - A learning experience
   - Was great to feel challenged
   - Found myself thinking about change ... at first
   - Then found myself actually looking at the different models
   - Cheryl's explanations were clear

3. *Please comment on the individual components within the change infusion model.*

   - **Step 1 and 2**
   - at the initial meetings I found that being open to the theories was easy ... I like the risk and the notion as mentioned in step 2 the "flexibility effects"
   - **step 3**
   - this is the step that really took the most effort ... to understand and then to start " crossing the line " into the courses I was teaching
   - **step 4**
   - as I started re-thinking my pedagogy , I found myself needing affirmation and re-affirmation that I was on the right track ... when I found out I was... it was like a dam bursting and then other ideas and considerations were flowing ... some fast ... some slow ... some still trickling ... some still to come
   - **step 5**
   - given the above steps ... the change infusion model then made me see how I was applying the key elements with the theories of change
   - in class , I would often say ... this is a change ... or this is something new ... although I never mentioned the model name or the individual components
   - and as Sherie remarked ... " it is like moving from the unconscious to the conscious "

4. *Please comment on the material provided to support the change infusion model (the unit overviews, instructor background notes, & examples) and determine what was most and least useful, what was missing, and what must be expanded.*

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- First of all , . . was amazing through the process ,,,the preparation , the notes, the patience , as I moved through the process
- .he.y. ; background and the resources she used really helped me understand the change infusion model
- I would have liked the inserts for the 5 theories of change handed out at each stage ... I found myself reading ahead and with my lack of knowledge often confused myself and was anxious for the meeting to understand

5. *Discuss the ease and ability to using the change infusion model.*

- Once my thinking focussed in on the theories ... I found it easier to start making the applications

6. *Discuss the effectiveness of using the change infusion model content with the goals, objectives, and content of your higher education course.*

- **The complexity Theory**

  This theory was particularly interesting to consciously try
  - example; told the class that I was going to " develop " the course outline over 5 days with explanations and demonstrations
  - I was afraid the class would be anxious ... on the contrary , they were accepting and the "new approach " worked ... based on feedback
  - Given that , my confidence was strengthened to try more " changes "

- **Contingency Theory**

  This theory with the concept of manoeurving between the stable to the unstable Worked when "new" activity based experiences " were introduced into the course

- **Disorganized Capitalism**

  This theory was tried by introducing a round table discussion and the idea of a " question box " ... and then a discussion of items in question box --- with the directions that I may or may not be able to answer

- **Dispersed Domain**

  Two things were experienced in this theory :

  - adding an online email distribution in a face to face course

- this saved on paper products and I think made the class feel connected even when not in class
- in the online course , the challenge was to promote, demonstrate a group activity (50 % of the mark) ... by thinking about this model , I was able to introduce the notion in a small activity ... for practice .... And then the big activity did not seem so big

7. Do you have any suggestions for materials that may be useful in guiding or assisting the instructor utilizing the change infusion model.

- Would have found it helpful to be given the models at each meeting
- At first the information in the binder was overwhelming ... until I got a handle on it ... " the handle was the result of Cheryl's explanations

8. Provide reflective suggestions for change or adaptations to improve the change infusion model and its use.

9. Provide a satisfaction or dissatisfaction level with the change infusion model on a Likert scale of 1 – 5 with:
             1 - strongly dissatisfied;
             2 – dissatisfied;
             3 - undecided;
             4 - satisfied; and
             5 - strongly satisfied.

10. Please provide a level indicating your ability to use the change infusion model in practice on a Likert scale of 1 – 5 with:
             1 - strongly dissatisfied;
             2 – dissatisfied;
             3 - undecided;
             4 - satisfied; and
             5 - strongly satisfied.

11. Provide comments on (a) the information session and (b) the use of the change infusion model.

Answered in previous questions

12. Please feel free to comment on any aspect of this process, as you have experienced it, that has not been addressed by these questions.

- Thank you for the experience and the learning and the renewed excitement on visiting and re-visiting the pedagogy of the courses I teach.

INBOX: GUIDED RECORD QUESTIONS (14 of 16)

Date: Wed, 16 Jun 2004 20:42:14 -0400
From: Janet Watt <janet.watt@sympatico.ca>
To:
Subject: GUIDED RECORD QUESTIONS

I am sending you what I have done to date. I had worked on this prior to completing
my marking for our Special Ed. course. That was completed yesterday. My intention
was to work on this today, complete it and send it to you today. However the sudden
and unexpected death of a friend (she was only 51) early this morning has put my life
on hold for the day. I'm not sure what's happening tomorrow and Friday as regards
arrangements for my friend so don't know when I'll get back to this. I will try and
complete it on Friday. My apologies.

Janet
Change Infusion Model: Guided Record Questions

1.   Please comment on the overall change infusion model concept.

The concept is, on the whole, a valid and thought provoking one. Formal pedagogy has
not kept pace with our rapidly evolving and diverse global community. There seems to
be no match with current pedagogical practices and the "real" world (for want of a
better word). There may be some small pockets where this concept has already been
embraced but there is not consistency across the broad spectrum of formal education.

2.   Please comment on the collaborative meetings held to discuss the change
infusion model.

The collaborative meetings were useful to me for the following reasons:

  a.. Establishing a rapport and comfort level with the group members allowed me to
feel non-threatened when expressing ideas or opinions
  b.. Giving me a springboard from which to generate my own ideas and opinions
  c.. Alleviating anxiety over the expectations for the study
  d.. Discussing the content of the document in order to make clear any
misunderstandings or misconceptions
  e.. The "brainstorming" and sharing of ideas furthered open communication among
members of the group
  f.. Discussion validated personal thoughts and beliefs of the individual about the
content
  g.. The facilitator's acceptance of any and all contributions in the group
discussions furthered open, honest dialogue

3.   Please comment on the individual components within the change infusion model.

4.   Please comment on the material provided to support the change infusion model (the unit overviews, instructor background notes, & examples) and determine what was most and least useful, what was missing, and what must be expanded.

Material provided was complex and, at times, I needed to re-read some sections in order to gain understanding of it. However, upon doing that, I did begin to develop a level of understanding that enabled me to feel more comfortable within the group setting. Not having been involved in a project of this depth and magnitude before I was somewhat overwhelmed to begin with. Having been out of formal education for a number of years, except for my very short sessions with the AQ courses, I found I had to reach back into my past educational experiences and get my "academic hat" out of storage.   What probably would have helped me would have been more concrete examples of each theory, more face to face discussions and, for me, a longer time frame to try and implement some of these theories.

5.   Discuss the ease and ability to using the change infusion model.

Difficult to comment upon. I need much more time to feel comfortable with the actual theories and recognizing them as I am implementing them. It takes me a while to "get my head around" a new concept or idea and whilst I was aware on a subconscious level that I was using some of the model I was unable to articulate that at the time.

.   Discuss the effectiveness of using the change infusion model content with the oals, objectives, and content of your higher education course.

s per the previous question, I feel I've hardly scratched the surface of the change nfusion model to be able to comment fairly. The little that I did attempt let me to e-evaluate my program delivery and attempt some novel approaches which made the andidates more comfortable and encouraged more participation and therefore, I hope, ore ease of and interest in learning.

would have found this easier had we not been implementing a brand new course. Although I know the content very well it was my first experience delivering this ourse content to the candidates. That detracted from my ability to concentrate on ie change infusion model as much as I would have liked.

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7. Do you have any suggestions for materials that may be useful in guiding or assisting the instructor utilizing the change infusion model.

8. Provide reflective suggestions for change or

adaptations to improve the change infusion model and its use.

Concentrating on one or two theories would focus the participant.

A longer time period of implementation would aid this participant.

Having each participant focus one just one of the listed theories may provide more in depth feedback of all.

9. Provide a satisfaction or dissatisfaction level with the change infusion model on a Likert scale of 1 − 5 with:

                        3 − undecided;

10. Please provide a level indicating your ability to use the change infusion model in practice on a Likert scale of 1 − 5 with:

                        4 − satisfied;

11. Provide comments on (a) the information session and (b) the use of the change infusion model.

12. Please feel free to comment on any aspect of this

process, as you have experienced it, that has not been addressed by these questions.

a.. .

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1.   I found that the change infusion model concept – which is completely i
paradigm shift for me (as an instructor and a professional) – enabled myse
be comfortable w/my pedagogy/teaching philosophy to engage practices 'out:
the box.' As such, I found it – and the general discussions regarding new
pedagogy models very enlightening.

2. The meeting were very well organized, and assisted greatly – both in
direction from the researcher, and in discussion w/the other participants
processing the components and expectations of the research project.

3.   I found that the individual components were very helpful, and clearly
explained the overall model; however, in some instances, it was a conside:
amount of information to absorb.

4.   The material was very helpful and in abundance. Perhaps in fact, it i
much information --- but in general, it was nice to know that the materia:
there to help us if we needed it! What was most helpful was the design cl
which outlined our progress and general expectations of the project.

5.   As discussed in our verbal meetings, this concept has for me now move(
the sub-consious to the consious. As such, I will continue to embrace 'cl
and ways to incorporate it in my pedagogy.' As for direct ease and abilit;
while I don't intend to implement a 'change' unit directly in my courses;
foresee ways to use the concept of change in my curriculum, specific to m;
course materials and content.

6.   As I haven't completely flushed out the change infusion model and it':
proper use in my course, I am still hesitant to comment on the overall
effectiveness of it's use in my class(es).

7.   The only suggestion I would have it to incorporate a weekly email upd;
assist the learning and communication of the model and its challenges.

8.   I don't really have any suggestions – you did a great job!

9.   4

10. 4

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