

Implementing Change-Oriented Pedagogy in Higher Education: An Exploration of Instructors' Experiences and Perceptions

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This article has been anonymously peer-reviewed and accepted for publication in the *International Journal of Pedagogies and Learning*, an international, peer-reviewed journal that focuses on issues and trends in pedagogies and learning in national and international contexts. ISSN 1833-4105.
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Abstract

This inquiry provided university educators with an opportunity to experience a conceptual pedagogical change model (the Change Infusion Model). The model encouraged framing teaching and learning activities with characteristics of theories of change to encourage learning for change. This inquiry developed understandings of educators' realities of pedagogical change.

Data collection procedures were framed with LaBoskey's Dimensions of Reflection (1993) and involved a written and collaborative discourse method. Analysis involved 'sensitizing concepts' (Patton, 2002) to guide the generation of meaning of the experiences of change.

The findings revealed 4 paradoxes that have significant meaning in the professional lives of educators. The significance of this inquiry is its contribution to understandings of the challenge of approaching pedagogical change from practitioners' perspectives.

Key Words: Change-pedagogy, postindustrial pedagogy, Paradoxes in pedagogical change processes

Introduction

We are living in postindustrial times (Bell, 1973; Limerick, Cunnington, & Crowther, 1998; Zuboff, 1988). The impact of postindustrial change on institutions and organisations as well as our professional and personal lives has been massive. The result is authoritative perceptions of a range of new human challenges. These challenges include a postindustrial change that requires managing complexity and unpredictability (Homer-Dixon, 2001), fragmentation of thought and experience (Schneiders, 2003), and a questioning of absolutes or orthodoxies (Starratt, 1995). According to Hirschhorn (1984) and Sproull and Kiesler (1991) this environment demands a process of active and continuous learning in order to accommodate change.

This research study encouraged participant educators to respond to the challenges of change in 21st century education. The literature on change outlined the presence of an *adaptation perspective* that supported the notion that individuals were capable of voluntarily adjusting to changes in the environment (Daft & Huber, 1987; Lewin, 1951). The research followed the lead of authorities such as Castells (2000) and Holtzhausen (2000) and encouraged adapting pedagogy for postindustrial times. Specifically, this study examined paradoxes in the process of adapting pedagogy.

The postindustrial context for university teaching

The concept of “paradox” as a lens through which to interpret human responses to the complexity of societal conditions is not new. Van de Ven and Poole (1988) defined a paradox as “a real or apparent contradiction between equally well-based assumptions or conclusions” (p. 22). A paradox can result in incongruence and inconsistencies. Yet, a paradox is frequently regarded as a distinctive feature of late and postindustrialism due to the forces of contemporary change. Indeed, with the advent of postmodernism (for example, Foucault, 1973, 1977; Lyotard, 1984), and neohumanism (for example, Ferguson, 1980), the late industrial era has seen the values and associations that generated human identity throughout the ages challenged. Paradoxically, a resolution to this challenge that provides a direction on what the values and associations should be for the times has not yet been successfully achieved (Ferguson, 1980; Lasch, 1995).

Peter Drucker's concept of postindustrial change included the introduction of knowledge workers as potential leaders in the ‘Age of Social Transformation’ (1994). A demand for these workers can cause immense stress on university academics managing (or not managing) postindustrial forces of production. Amongst Duckers’ key points is that if educational institutions do not adapt to successfully manage the competing forces of change for productivity they will be abrogating their responsibilities and their economic survival will be threatened. In addition, Drucker indicated that university academics cannot ignore postindustrial change or its massive impacts on themselves, the institutions, students, or scholarly disciplines.

Australian social commentator Hugh MacKay, writing from a social psychological perspective, has asserted that the impacts of such change processes lead to new forms of identity-based “anxiety.” McKay indicated:

The so-called Age of Anxiety is in reality nothing more than a symptom of the fact that what we are really living in is the Age of Redefinition. Since the early 1970s, there is hardly an institution or a convention... which has not been subject to serious challenge or radical challenge (1993, pp. 17-18).

University responses to postindustrial change have varied significantly in accordance with national political and policy priorities. For example, Sorcinelli and Austin (2006) asserted that Senge's (1990) concept of a “learning organisation” has taken a strong hold in many American universities in response to the need for meaningful pedagogical change. In Canada, Julia Hughes, President of the Society for Teaching and Learning in Higher Education, recently remarked that the scholarship of teaching and learning (SoTL) is essentially a “grass roots” movement (Hughes, 2006, p. 1). This movement is focused in faculties with minimal government intervention. In

Australia the government has been instrumental in introducing reforms directed at the enhancement of university teaching, primarily through funding incentives, university rankings based on a range of outcomes criteria, and financial rewards (Gonczi, 2004). In the UK, the 2004 Higher Education Bill has introduced reforms that bear strong resemblance to the developments in Australia including individual academic certification (Nicholls, 2001), institutional planning and accountability (Trowler, Fanghanel, & Wareham, 2005), and the concept of reflective practitioner (Trowler et al.). Similarly, trends in some European countries have been criticised as overlybureaucratic, while trying to increase entrepreneurialism and professionalism (Stensaker, 2006).

These examples indicate that postindustrial pedagogical change in universities assumes multiple forms. The national context is a significant variable in the form assumed.

Definition of a pedagogical paradox

This study examined paradoxes in the processes of pedagogical change. The following operational definition of 'pedagogical paradox' was developed to guide the research design and methodology:

Pedagogical paradoxes occur in the professional life of a university educator when a significant proposal for educational innovation leads to intellectual and values contradictions for the educator, creating confusion, ambiguity, and anxiety about the appropriateness and quality of personal pedagogical practice. The contradiction can occur within an individual and between individuals and institutions.

This research study examined arising paradoxes in the experiences of a small cohort of university educators as they considered a pedagogical response for contemporary change through the change infusion model (CIM). The CIM is described, and then an example of how to use the model is presented.

The Change Infusion Model (CIM)

The CIM was derived from Gay's (1995) "multiple changes of infusion" framework. Gay claimed, as numerous other researchers have done, that the development of pedagogical theories is far more advanced than is implementation of pedagogical change processes in classrooms. As a way of redressing this "imbalance," she proposed the concept of *infusion*. Gay's model of infusion was applied to pedagogy for changing multicultural education. The CIM presumes to represent a pedagogically oriented derivative of the original Gay model. In the CIM the focus is on infusing characteristics of theories of change within pedagogy (into the instructional and learning strategies). The CIM aims to encourage learning for change in multiple disciplines.

The research employed the CIM as the vehicle for exploring university educators' responses to a change phenomenon. The model is represented diagrammatically in Table 1: The Change Infusion Model.

Table 1: The Change Infusion Model (CIM)

<i>Constructivist steps</i>
Step 5: Conceptually apply key characteristics you choose from theories of change to your pedagogy to adapt it for postindustrial change and explore implications for change.
↑
Step 4: Reflect to rethink pedagogy: Explore your personal views of how theories of change can be utilised to change your pedagogy.
↑
<i>Cognitive steps</i>
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 CIM employs three cognitive steps designed to stimulate understandings about change. Then two constructivist steps encourage rethinking pedagogy to conceive how characteristics of theories of change can be infused within pedagogy. The CIM steps aim to guide educators to rethink pedagogy to adapt for postindustrial change.

To use the Change Infusion Model to begin a participant must agree to consider infusing characteristics of theories of change within pedagogy and to personalize pedagogy. The participant then selects a theory of change and learns the characteristics of the theory. In this example the characteristics of complexity theory are utilised. Complexity theory indicates that the world consists of dissipative structures. This means the structures are constantly evolving and being pulled apart and refitted by the forces and cannot be expected to be in “equilibrium” (Keirse, 2003, p. 4). The environment is in a pivotal state (Doherty & Delener, 2001) with conditions of “uncertainty, diversity and instability” (Stacey, 1996, p. 349). The participant then rethinks pedagogy to determine how these change characteristics can be infused within pedagogy.

In this case, the characteristics of change are infused within a learning strategy that is a written assignment. To illustrate the characteristics discussed above, the assignment is adapted to be completed in small groups of four members in a classroom and to be a three-stage progressive assignment with a changing group format. The changing group format meant half of the members of the group changed at the end of each of the three stages of progression. The group had to continue to make progress on the next stage of the progressive assignment with the new group members. This change required learning about the new members, bringing the new members up to date on the status of the assignment, learning to work as a new group and completing the assignment. Thus, the characteristic of complexity theory that the world is not in a state of equilibrium was infused within the framework of the written assignment to

encourage learning for change. The model encouraged a context of postindustrial change to be expressed within the classroom-to stimulate real-world change.

Research Design and Methodology

This research study examined paradoxes in the experiences of the participants as they engaged with the CIM. The research question that guided this study was: *To what extent, and in what ways, is the concept of “paradox” helpful in interpreting and understanding research participants’ experiences with the change process in question?*

Research sample

The research sample consisted of University educators from two institutions drawn from a variety of academic departments. Each educator completed the research during a semester in which they were teaching.

The research sample was subdivided into a three-trial process (or three groups). Each trial consisted of one academic semester of 12 weeks with a minimum of one academic semester between trials. The time between trials was used to learn from the process and allowed for a sequential and evolutionary developmental relationship between the three-trial processes. The trials were not independent but were built upon the foundation of understandings developed in the previous trial.

Nine educators completed all research requirements, 3 in each trial. The participants are referred to in the sample data presentation by code names. For example stage 1 participant 1 was coded: S1-1.

Data collection

Data collection involved a collaborative discourse method and a guided record method. The collaborative discourse method involved a series of five group meetings with the researcher that were held over the semester in which the trials were held. The meetings were used to teach participants the CIM (see Table 1: The Change Infusion Model) and to obtain the opinions of the participants on the model process and arising issues. The collaborative discourse method also required participants to conceptually engage with the model-to determine how they could institute each CIM step discussed at each meeting within the course(s) they were teaching and to discuss this engagement at subsequent meetings. The meeting discourse was audio-taped and transcribed verbatim. The meeting objectives, questions and actions required are outlined in Table 2: The Collaborative Discourse Data Collection Method. Overall, this method used what Fishbaugh (1997) called a teaming model that allowed members to participate on an equal basis with verbal communication as the process for an exchange of meaning (Schreiber & Moring, 2001).

Table 2: The collaborative discourse data collection method

Meeting objectives	Research participant activities
<p>Meeting #1: Introduced the research topic, obtained consent of participants to participate.</p>	<ul style="list-style-type: none"> - Researcher presented a general overview of the research topic. - Participants discussed the following questions: A - Do you take steps to allow for, or to account for, change in your current courses? If so, please explain how. B - How are we as educators learning to accommodate change? C - How does change impact your teaching? - Participants received a written information package describing the research and participant requirements. - Participants listened to a verbal review of the package contents completed by the researcher - Participants signed consent forms if they decided to participate in the research.
<p>Meeting #2: Introduced CIM Step 1 and Step 2.</p>	<ul style="list-style-type: none"> - Following a welcome, participants discussed the following question: How do you feel about (a) the premise of the condition of change as an environmental element, (b) theories of change in your course, and (c) accepting your own perceptions and opinions concerning change? - Researcher then introduced Step 1 in the CIM: 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. - If participants agreed to Step 1, they continued on as a participant with the research if not, they were excluded from the study. - Research then introduced Step 2: Personalize change knowledge: Value differentiated knowledge for potential advantage-called flexibility effect (Conner & Prahalad, 2002). The value of personal knowledge was discussed with the participants.
<p>Meeting #3: Introduced CIM Step 3.</p>	<ul style="list-style-type: none"> - Researcher and participants discussed the following questions: A - What is your comfort level for taking risk in life? High 1 - 2 - 3 - 4 - 5 Low. Provide examples. B - What makes you a good instructor? C - What instructional and learning strategies do you use and why? D - State a critical incident that has had an impact on your pedagogy. - Researcher introduced Step 3: Develop an understanding of contemporary theories of change. - Researcher verbally presented and discussed descriptions of complexity theory from the research information package. - Participants were asked to engage with the theories to learn more about the characteristics within each of the two theories. The engagement involved determining how the theories could be applied to their current classroom content and curriculum priorities. Over the course of a 3-week time period, participants were asked to introduce the theories within their course content with the idea that needing to explain the theories to their students and to indicate the application of the theory aided the development of the participants' understanding of the theories.

Table 2: The collaborative discourse data collection method continued

<p>Meeting #4: Introduced CIM Step 4 and Step 5. Participants conceptually applied the model.</p>	<ul style="list-style-type: none"> - Researcher and participants discussed the experience of incorporating theories of change within their course content. - Researcher introduced Step 4: Reflect to rethink pedagogy: Explore your personal views of how theories of change can be utilised to change your pedagogy. - Researcher introduced Step 5: Conceptually apply key characteristics you choose from theories of change to your pedagogy to adapt it for postindustrial change and explore implications for adapting pedagogy for postindustrial change. - Participants discussed the implications of pedagogical change. - Participants were asked to go back to the classroom for a 2-week time period and reflect on the way change could be infused within pedagogy and on the implications of change.
<p>Meeting # 5: Discussed the conceptual application of model including the ability to, and the impact of, infusing theory into practice.</p>	<p>Researcher and participants discussed the following questions:</p> <ul style="list-style-type: none"> A - Tell me about the ability to conceptually implement the options you developed with the CIM. B - Would implementing the CIM require adjustments in your course goals/objectives? C - What institutional support is needed to implement the CIM? D - What obstacles do you foresee for implementing the CIM? E - How do you feel about the CIM concept? F – What options for infusing change were conceived, and were the options developed of value? (Why/Why not?) G - If implemented, how would the CIM affect your academic activities? H - Now that you know about the CIM, how might it impact your practice?

The guided record method included the provision of questions that guided the participant in their written reflective submission. The submission was made at the end of the 12-week research duration. The guided record method questions, along with the collaborative discourse method questions above, were framed with the four dimensions of reflection outlined by LaBoskey (1993), and were (a) the purpose, (b) the context, (c) the procedures, and (d) the content. Two guided record method questions used the Likert Method of Summated Rating (Best & Kahn, 1986) 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 questions are outlined in Table 3: The Guided Record Data Collection Method Questions.

Table 3: The guided record data collection method questions

<ol style="list-style-type: none"> 1. Please comment on the overall change infusion model concept and process. 2. Please comment on the collaborative meetings and guided record method used to discuss the model. 3. Please comment on the CIM in relation to the goals, objectives, and content of your university course(s). 4. Please comment on the potential impact of the CIM in practice. 5. Please feel free to comment on any aspect of this process, as you have experienced it, that has not been addressed by these questions.
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Data analysis

The use of text 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 discourse text and guided record text were analysed using a qualitative constructivist method of reviewing and uncovering common elements and themes within the data. The text conveyed a shared interaction on the model and its use and was deemed the expression of meaning by the participants (Truex, 1993). The analysis placed “value on self-reports and critical narrative” (Nicholls, 2001, p. 62). The analysis was aided by what Patton (2002) called ‘sensitizing concepts.’ The concepts were preestablished and looked to specifically focus on identification of potential ‘paradoxes’ relating to the phenomenon of change and the implications of paradoxical constructs in research participants’ professional lives.

Limitations

It is important to note that the participants’ experiences and perspectives in this research are particular to two Universities in one national context. A broad application of the findings of the research may therefore be of limited generalisability.

Research Findings and Discussion

This study provided participants with an opportunity to conceptually engage with the CIM in a way that encouraged a pedagogical response for postindustrial change. It examined paradoxes arising from the process of adapting pedagogy. The data revealed that participants’ pedagogical change could indeed be viewed in the context of a paradox. Four paradoxes were revealed as shown in Table 4:

Paradox 1: A participant’s intellectual desire to adapt pedagogy for postindustrial times may be incongruent with a readiness to complete the task.

The first paradox was that participants may agree to adapt pedagogy for postindustrial times but may not have the readiness to complete the task of pedagogical change. Several examples of participant comments supporting this paradox are provided. To begin, S2-1 stated: “Professors are trained to cover the content.” In addition, S2-1 indicated that when an educator wanted to create pedagogical change, “people won’t magically know what to do.” These comments were made in reference to a lack of training provided to aid educators in pedagogical change. S2-2 indicated that in terms of pedagogy, if “you say we are now transforming, we are now being flexible, it does not mean it can happen on cue.” A reason for a lack of ability to adapt pedagogy was provided by S3-1 as: “They may understand it intellectually but not be able to translate it into any kind of action as they do not even know how their pedagogy is designed or how to implement change.” In addition, S2-1 indicated that pedagogical change is “absolutely world shattering . . . because their whole world is constructed in ways that they have never acknowledged explicitly.”

After analysis, the heart of this paradox was determined to involve the concept of *hierarchy of needs* (Maslow, 1970). This hierarchy indicated that lower order needs must be satisfied before it is possible to obtain higher order needs. Significant proposals for educational innovations in pedagogy may appeal to one’s intellectual “higher” needs for keeping with the times but may not be congruent with “lower” needs involving the acquisition of practical skills to create pedagogical change. According to S2-1: “The condition of change stokes the demand for constructivist

learning approaches, and educators must learn to construct their change knowledge.” A lack of training in constructing pedagogical change can lead to confusion on how to complete a change process.

Paradox 2: A participant’s intellectual desire to adapt pedagogy for postindustrial times may be incongruent with one’s desired workload.

The second paradox was that a participant’s intellectual desire to adapt pedagogy for postindustrial times may be inconsistent with a desired workload. The literature indicated that a process of active and continuous learning is needed to accommodate change (Sproull & Kiesler, 1991). This means adapting pedagogy required one to learn and accommodate change, increasing one’s workload. Several examples of participant comments supporting this paradox are provided. S3-1 indicated: “It’s okay to look at change . . . it gives me another level of reflection.” This comment revealed that pedagogical change is a good activity that can stimulate reflection. However, S2-1 stated: “At what point do you stop?” as “the volume of work on the teacher is immense in a change model.” In addition, S3-1 felt: “They may understand that change is a good thing . . . but if it means I have to change x, y, or z . . . then forget it.” These comments indicate a significant proposal for educational innovation can lead to a contradiction within an individual concerning workload. An increased workload impacts the professional life of a university educator and may create anxiety.

Paradox 3: An educator’s intellectual desire to adapt pedagogy for postindustrial times may be inconsistent with the institution’s expected outcomes in a set time period.

The third paradox was that an educator’s intellectual desire to adapt pedagogy for postindustrial times may be inconsistent with the institution’s expected outcomes in a set time period. Examples of participant comments that support this paradox are presented. To begin, S2-1 stated: “If you are wanting things to be emergent, but you are agenda anxious, then that’s a tricky negotiation.” This participant indicated the institution promoted an agenda that must be met, and negotiating through pedagogical change could present a challenge in meeting this agenda. Also, S2-2 stated: “We are constrained by the number of weeks in a course.” The institutional parameters in the learning process can present a challenge when using a change process. In addition, S2-1 indicated: “Everyone feels that every risk is an opportunity for failure . . . there is a product-based mentality.” This contradiction between the individual educator and the institution indicated that there is risk in being innovative while maintaining educational standards during the change process.

A constructivist process includes knowledge in a constant state of flux as learners continuously analyse, adjust, and construct conclusions (Brockbank & McGill, 2003). In contrast, a conservative outcome-based institution wants specific outcomes achieved on a repeated basis (Zyngier, 2005). A constructivism process is thus incongruent with an institutions outcome based accountability. In addition, Fullan (2001) suggested that change brings forward 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). When a participant adapts pedagogy for greater alignment with postindustrial times, an

expected period of declining success arises due to the instability from pedagogical change. Chancing the paradoxical situation of incongruence with institutional outcomes and a dip in performance are the realities of practice when adapting pedagogy.

Table 4 Four key paradoxes emerging from the research data

Paradox number	Description of the paradox	Illustrative quotes supporting the paradox
Paradox 1	A participant’s intellectual desire to adapt pedagogy for postindustrial times may be incongruent with a readiness to complete the task.	S2-1: “People won't magically know what to do.” S2-2: If “you say we are now transforming, we are now being flexible, it does not mean that it can happen on cue.” S3-1: “They may understand it intellectually but not be able to translate it into any kind of action as they do not even know how their pedagogy is designed or how to implement change.” S2-1: Change is “absolutely world shattering . . . because their whole world is constructed in ways that they have never acknowledged explicitly.” S2-1: “Professors are trained to cover the content.” S2-1: “The condition of change stokes the demand for constructivist learning approaches, and educators must learn to construct their change knowledge.”
Paradox 2	A participant’s intellectual desire to adapt pedagogy for postindustrial times may be incongruent with one’s desired workload.	S3-1: “It's okay to look at change . . . it gives me another level of reflection.” S2-1: “At what point do you stop?” S2-1: “The volume of work on the teacher is immense in a change model.” S3-1: “They may understand that change is a good thing... but if it means I have to change x, y, or z...then forget it.”
Paradox 3	A participant’s intellectual desire to adapt pedagogy for postindustrial times may be inconsistent with the institutions expected outcomes within a set time period.	S2-1: “Everyone feels that every risk is an opportunity for failure . . . there is a product-based mentality.” S2-1: “If you are wanting things to be emergent, but you are agenda anxious, then that's a tricky negotiation.” S2-2: “We are constrained by the number of weeks in a course.”
Paradox 4	A participant’s intellectual desire to adapt pedagogy is in contradiction with the institution’s support for risk.	S3-1: “The process for change within a university... is beyond snail.” S3-1: “It's like I'm out on a limb.” S2-1: “It has to be phased in, absolutely phased in.” S2-2: “Not to be done at the last minute or midstream.”

A constructivist process includes knowledge in a constant state of flux as learners continuously analyse, adjust, and construct conclusions (Brockbank & McGill, 2003). In contrast, a conservative outcome-based institution wants specific outcomes achieved on a repeated basis (Zyngier, 2005). A constructivism process is thus incongruent with an institutions outcome based accountability. In addition, Fullan (2001) suggested that change brings forward 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). When a participant adapts pedagogy for greater alignment with postindustrial times, an expected period of declining success arises due to the instability from pedagogical change. Chancing the paradoxical situation of incongruence with institutional outcomes and a dip in performance are the realities of practice when adapting pedagogy.

Paradox 4: A participant’s intellectual desire to adapt pedagogy for postindustrial times is in contradiction with the institution’s support for risk.

The fourth paradox was that an educator’s intellectual desire to adapt pedagogy for postindustrial times may be in contradiction with the institution’s support for risk. Participants discussed that educators without tenure could find that being adventurous is risky to one’s career. The respondents indicated that those that espouse change find the educational institutions to be unsupportive of their efforts. This was expressed as S3-1 indicated that change placed an educator in a position thus: “It’s like I’m out on a limb.” Participants discussed that this lack of support was the result of change being accepted at a very slow rate within the educational institution. S3-1 stated: “The process for change within a university . . . is beyond snail.”

Overall, participants revealed that the realities of paradoxes in the process of change meant educators must avoid wholesale changes. Change, according to S2-1: “It has to be phased in, absolutely phased in” and S2-2 suggested that change was: “not to be done at the last minute or midstream.” In addition, Fullan (1993) and others have called for educators and their institutions to work in unison; but this research finds this call has been unfulfilled. Due to the lack of a substructure that supports change in education, respondents indicated university academics must tread slowly in the process of change in pedagogical delivery due to a lack of institutional support. Participants indicated the CIM could bring forth options for adapting pedagogy. However, the implementation of pedagogical change is appropriate only if incrementally phased-in to afford time necessary to manage and resolve paradoxes inherent in pedagogical change.

Conclusion

In this study, the CIM was used to enable a small cohort of university educators to develop understandings regarding the challenge of pedagogical change in 21st century education. This study examined paradoxes in the process of adapting pedagogy. The outcomes of this research related to the research question: To what extent, and in what ways, is the concept of ‘paradox’ helpful in interpreting and understanding research participants’ experiences with the change process in question? The conclusions included the following:

The lens of a paradox assisted in understanding the contradictions and inconsistencies in a pedagogical change process. Participants in this study concluded that paradoxes were integral to their perceptions of the process of pedagogical change. Four paradoxes were revealed. Each paradox had significant meaning in the professional lives of the study participants. The meaning included that a desire to adapt pedagogy for postindustrial times required one to manoeuvre to acquire a readiness for change, to manage an increased workload, and potential incongruence with the institutional

expected outcomes and support for risk. The paradoxes were supported by the literature that indicated postindustrial times required active and continuous learning to accommodate change (Hirschhorn, 1984; Sproull & Kiesler, 1991).

One implication of the conclusions is that educators interested in adapting pedagogy for postindustrial times needed to learn to navigate paradoxes in the process. Philosophically, the researchers of this study supported a belief that a lifelong process of active learning required one to take risks to navigate change. However, in practice, risks may negatively impact one's academic work and life. Thus, a second implication based on the conclusions is that the journey of pedagogical discovery must be an intertwined process between the educator and the institution. Educators and their institutions need to be more collaborative in the struggle to advance pedagogical learning for postindustrial times. This is a significant statement for sharing, discussing, and consideration by the educational community.

This study provides a significant contribution to understanding the process of pedagogical change in practice and to the body of knowledge for the educational community on adapting pedagogy for postindustrial times. It is conceivable that the four paradoxes may apply in the work of university academics across many university contexts.

A recommendation for a concentration of research is made for exposing paradoxes in pedagogical change and determining best practices in navigating through paradoxes. It is apparent from the research that university educators confront significant intellectual challenges in responding to the demands of their postindustrial contexts. To keep pace with our unfolding times, further pedagogical research engagements are clearly necessary.

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