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ONLINE LEARNERS' EDUCATIONAL PARADIGM PREFERENCES: TWO FACTORS IMPACTING INTEGRATION OF EMERGENT TECHNOLOGY

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ABSTRACT

A doctoral dissertation employed a critical pragmatic research paradigm and a transformative mixed methods methodology to explore what educational paradigm most empowers leaners to acquire higher levels of emergent technology integration for learning on demand. Participants included 12 graduate-level students from two Master of Education courses at one online North American institute during one four-month term. A Paradigm Shift Framework (Wark, 2018) was designed to generate quantitative questionnaires and qualitative interviews for capturing participants' paradigmatic preferences and perceived levels of integration mastery with 16 emergent educational technologies throughout the term. This paper identifies two possible factors for why, collectively, respondents in Course A moderately increased their preference for a behavioural paradigm, while Course B respondents significantly increased their preference for a perceptual paradigm by the end of the term. The first factor is respondents' conception of the term, emergent technology, and the second is the practice of mindfulness.

Keywords: Andragogy, educational paradigms, emergent technology, heutagogy, mindfulness, Paradigm Shift Framework, pedagogy

INTRODUCTION

Gros (2016) claims that *emergent technologies* (or "[t]ools, concepts, innovations, and advancements utilized in diverse educational settings to serve varied education-related purposes"; Velentsiano, 2010, p. 33) are most likely "adopted from other fields so integration typically warrants the co-evolution of such technologies with educational practices" (Wark & Ally, 2020a, p. 1013). Veletsianos (2020) agrees, going on to say that the use of emergent technologies in education "may necessitate the development of different theories, pedagogies, and approaches to teaching, learning, assessment, and organization (p. 18)." The conundrum that educators face is how to adequately facilitate learners' ongoing capacity to reflexively integrate suitable emergent technologies in a world characterized by everchanging technologies and education practices (Brynjolfsson & McAfee, 2014; Kurzweil, 2005; Moore, 1965/1998, 1975; Wark, 2018).

To help educators resolve this conundrum, a doctoral dissertation explored what *educational paradigm* (defined as "the shared beliefs, theories, and practices, including research practices, associated with a particular educational group or school of thought"; Wark, 2018, pg. 26) most assisted learners in integrating 16 currently-emerging technologies for learning on demand. A critical pragmatic research paradigm, mixed methods methodology, and Paradigm Shift Framework (Wark, 2018) were employed for this project. Quantitative questionnaires and qualitative interview instruments developed from the Paradigm Shift Framework were used to gather data from 12 volunteer students enrolled in two Masters of Education in Distance Education (MEd DE) courses during the Fall 2017 semester at one online North American institution.

The dissertation focused upon individual and whole group, rather than course-based respondent results. Nevertheless, while undertaking this study, some notable differences between Course A and Course B respondent profiles emerged. When the term began, all respondents in both courses reported being at the early practice level with the integration of the 16 emergent educational technologies for learning, yet their end-of-term integration levels varied remarkably. These end-of-term results were not anticipated because various course elements in both courses remained consistently similar throughout the term. Only two significant differences could be identified in the data. First, the data suggested that many respondents struggled with the broad definition of the term, emergent technology, as defined by Veletsianos (2010). Second, only Course B respondents were exposed to mindfulness teaching and learning strategies. It is these findings that are discussed herein.

LITERATURE REVIEW

This literature review opens with definitions for some key terms before moving on to a succinct review of the theory, nature, and power of learning, as well as the roles that technology-enabled distance education and mindfulness teaching and learning strategies play in the learning process.

Definitions

The first key term requiring definition is *technology,* which consists of the Greek root words: *techne* (art, craft, skill, or means for obtaining something) and *logos* (inner thought or feeling expressed outwardly). There are innumerable definitions for the word; most are associated with the Greek root, techne, which expresses a utilitarian view of technology (Thierer, 2014). The dissertation and this paper, however, acknowledge both root words, thus defining technology as "tools, means, skills, crafts, or systems that are outward reflections of individual and societal values and motivations" (Wark, 2018, p. 4).

Since Veletsiano's (2010) definition of *emergent technology* ("[t]ools, concepts, innovations, and advancements utilized in diverse educational settings to serve varied education-related purposes," p. 33) also captures both root words for the term, technology, it is Veletsianos' meaning of "emergent technology," that is adhered to in the dissertation and this paper.

Numerous scholars, such as Freire (1970/1993), Newmann and Associates (1996), Murphy (1996), van Manen (1999), Mortimore (1999), and Hamilton and McWilliam (2001), use the word, pedagogy, as broad term to describe various approaches to teaching and learning. Nevertheless, for the purpose of this paper, *pedagogy*, is meant to be understood as a teaching approach identified specifically with the behavioural paradigm.

The Theory, Nature, and Power of Learning

The dissertation considers two disparate epistemic views on the source of human knowledge, as well as the educational paradigms and learning approaches generated from these views. The first viewpoint, established by the empiricist, Aristotle, argues that the source of knowledge is the external, objective world. Learning requires absorbing this world through human senses. This belief constitutes the foundation of the behavioural paradigm and pedagogical approach to learning (Emery, 1981; Hammond et al., 2001). Plato, the rationalist, counters that the source of knowledge is subjective, innate human perceptions. This latter position yields the foundation of a perceptual paradigm and a *heutagogical* (or "learner-determined"; Hase & Kenyon, 2001), approach to learning (Emery, 1981; Hammond, et al., 2001; Hase & Kenyon, 2001, 2013). This review on the theories of learning necessitates a literary exploration about how humans learn naturally.

Literature on natural learning characterizes pre-school children as being instinctively curious, active learners who are intrinsically motivated by their dynamic interests to learn (Dewey, 1897, 1903, 1916/2007; Hase & Kenyon, 2013). Learning naturally carries on throughout life, is often social, and occurs in any setting (Benson, Harkavy, & Puckett, 2007; Dewey, 1897, 1903, 1916/2007). Humans intrinsically strive to achieve autonomy, mastery, purpose, and innovation (Pink, 2007), as well as to create a better humanity (Freire, 1970/1993). Neurological findings support the premise that the source of knowledge is innate, individual perceptions; genetics, experiences, and psycho-physiological states influence perceptions (Kluger & Stengel, 2011; Slater, 2002). Perceptual learning engages instrumental reasoning and *transformational learning* (a dynamic blend of [1] rational thought, consisting of logic *and* affective thinking, and [2] creative intuition; Emery, 1981; Mezirow, 1991; Robertson, 1997). Thus, the reviewed literature on natural learning and neurology substantiates the epistemic view that individual, innate perceptions are the source of human knowledge.

It is this apparent contradiction between what is currently known versus what is practiced in relation to learning that prompted a critical pragmatic comparative review of who retains the locus of control over learning in each paradigm. The traditional educational system is based upon a behavioural paradigm and pedagogical approach to learning. This system is governed by a top-down hierarchy of social, political, and educational elite (Bourne, 1917; Emery, 1981; Freire, 1970/1993). The curriculum is abstract, fractured, linear, one size-fits-all, and determined by those in power (Murphy, 1996). The institution and teacher control instructional time, pace, place, content, resources, delivery, and evaluation. Learning officially occurs in the formal schooling context, typically during the learner's younger years (Collins & Halverson, 2010). The goal is to transmit knowledge sanctified by the social elite to the masses in a manner that fosters rote memorization, instrumental reasoning, dependent learners, and ultimately, social compliance (Emery, 1981; Hase & Kenyon, 2001, 2013; Murphy, 1996; Palaiologos, 2011).

In an educational system governed by a perceptual paradigm and heutagogical approach to learning, the institution is governed by a networked egalitarian system emulating principles of autonomy, diversity, openness, interactivity (Downes, 2010), and responsibility (Freire, 1970/1993). The curriculum is holistic, individualistic, and based upon a learner-determined individual educational plan (IEP). The learner controls their learning throughout life within their unique personal learning environments (PLEs) with the support of their personal learning networks (PLNs; Blaschke, 2013; Hase & Kenyon, 2001, 2013). The teacher, or "learning leader," becomes a transient resource among many human and non-human resources in the learner's PLN/PLE. The goal of this system is to help the learner become independent and personally responsible for their own learning and educational path, which requires learners to hone instrumental reasoning *and* transformative thinking skills. (Emery, 1981; Hase & Kenyon, 2001, 2013; Mezirow, 1991; Robertson, 1997).

A third approach to learning reviewed in the literature is *andragogy* (a term coined by Kapp in 1833 to describe Plato's learning theory; Nottingham Andragogy Group, 1983), which Knowles associated to his own concept of adult self-directed learning (SDL; 1970). Knowles initially asserted that adult learners are unlike child learners because adults know what they want to learn about and are self-motivated to obtain such learning. In educative practice, the adult learner may possess some control over the learning context, but the instructor usually retains control over the learning process and task (Knowles, 1970; Palalas et al., 2017). Knowles (1984) eventually retracted his original assertion that adult learners are unique, arguing instead that all learners exist on a continuum between pedagogy and andragogy. While the reviewed literature did not indicate what paradigm andragogy is most closely associated with, the significant reliance upon the teacher to

direct most aspects of the learning process suggests possible adherence to the behavioural paradigm.

Technology-enabled Distance Education

The field of distance education (DE) is uniquely positioned to offer learners with the opportunity to realize control over their own learning. First, a central, persistent goal of DE is to provide education for all (Weydemere, 1971). Second, emergent technologies have been exponentially eroding the parameters of space and time (Bates, 2005; Moore, 1965/1998, 1975), increasingly enabling learners to learn when, where, what, and how learners desire. Nevertheless, some literature indicates that the emancipating role of DE is currently threatened by educators who desire to replicate the face-to-face behavioural/pedagogical educational system in the DE environment (Collins & Halverson, 2009; Herrington et al., 2009; Ng'ambi et al., 2012; Willams et al., 2011).

Mindfulness Teaching and Learning Strategies

One branch of contemplative science, mindfulness, focuses upon developing the relationship between mind and body through techniques such as meditation, deep listening, dance, breathing, reflection, and journaling (Barbezat & Bush, 2014; David, 2009; Goleman & Davidson, 2017). One of the goals of such practices is to center one's awareness of their body and thoughts fully in the present moment, rather than in past or future states (Miller, 2013). In other words, *mindfulness* means "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" (Kabat-Zinn, 1994, p. 3). Scholars such as Purser et al. (2016), as well as Goleman and Davidson (2017), point out that while the contemporary mindfulness movement has been touted by the media and some research reports have lauded the benefits of mindfulness while downplaying methodological weaknesses, much of the science that supports mindfulness is difficult to discredit.

Educators are becoming increasingly interested in mindfulness teaching and learning strategies because mindfulness "opens the mind and gives space for new understanding" (Barbezat & Bush, 2014, p. 98). David (2009) suggests that mindfulness enhances the learner's: (1) readiness to learn, (2) academic performance, (3) attention and concentration, (4) self-reflection and self-calming, (5) classroom participation and self-control, (6) social and emotional learning, (7) pro-social behaviours and relationships, and (8) holistic well-being, while also reducing test anxiety and providing tools to reduce stress (p. 9). Yet while educational research in face-to-face class settings indicates that mindfulness teaching and learning strategies promote attention, impulse control, self-awareness, compassion, and empathy, a paucity of studies exist on mindfulness teaching and learning in the online learning environment (Palalas, 2018). One of the few existing studies was an auto-ethnography by Palalas et al. (2018) that occurred in the Course B setting of the dissertation study, during the term after the dissertation data was collected.

METHODS AND PROCEDURES

The dissertation was founded on a critical pragmatic research paradigm (Deegan, 1988) and an exploratory transformative mixed methods methodology (Mertens, 2015). Analytic review of existing frameworks, models, and taxonomies led to the conclusion that none were capable of capturing paradigmatic elements of online learning environments and technology integration levels among students (Wark, 2018). Thus, a Paradigm Shift Framework, based upon reviewed literature and comprised of a Paradigm Shift Model and an Omni-tech Taxonomy, was created by the author (2018) to guide the development of data collection instruments for the dissertation and subsequent data analyses. A brief overview of the framework begins with an introduction to the Paradigm Shift Model.

Paradigm Shift Model

The Paradigm Shift Model represents two disparate educational paradigmatic states with an intervening shift between these states (Figure 1). This model is graphically illustrated as a Venn diagram to reflect that learning is "an individual, non-linear, messy, and dynamic process" (Garnett & O'Beirne, 2013; Hase & Kenyon, 2013; Wark, 2018). In Figure 1, P represents a primarily behaviouristic paradigm/pedagogical approach that encourages learner reflection, A represents a shifting paradigm/andragogical approach that aims to promote critical reflection, and H represents a perceptual paradigm/heutagogical approach that engages reflexivity. Reflection encourages learners' efficiency and effectiveness of performance (Finlay, 2008; Schön, 1983, 1987); critical reflection requires learners to analyze existing socio-political powers in relation to new knowledge or experience (Rose, 2013; Smyth, 1992), and reflexivity fosters the introspection of self, praxis, and human nature (Freire, 1970/1993; Ryan, n.d., Smyth, 1992). It is important to note that when learners achieve the heutagogical state of self-determined learning, they retain control over their own learning journey. This means that such learners may choose to learn in P or A environments if the learning outcomes in these environments mesh with the heutagogical learners' perceived learning goals (Wark, 2018; Wark & Ally, 2020a, 2020b, 2020c).

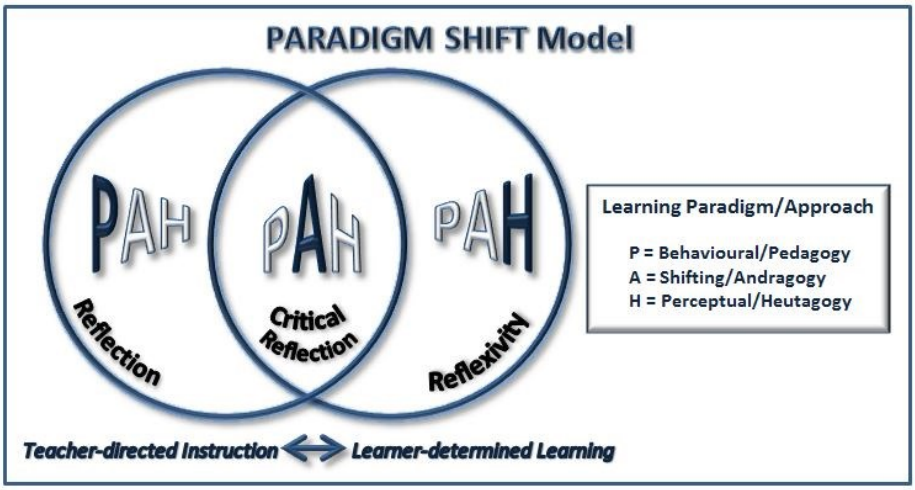

Figure 1:
Paradigm Shift Model showing movement between teacher-directed and learner-determined approaches to learning. P=a behavioural/pedagogical, A=a shifting/andragogical, and H=a perceptual/heutagogical paradigm and approach to learning (Wark, 2018).

Omni-tech Taxonomy

The Omni-tech Taxonomy (Figure 2) reflects varying levels of technology integration expected in relation to, from the left to right left columns, the behavioural/Pedagogical (P), shifting/andragogical (A), and perceptual/heutagogical (H) learning environments. The foci of technology integration in the P environment are upon the acquisition and practice of knowledge, skills, and attitudes. In the A environment, practice leads to technology integration competency. The learner gains the transformative capacity to perpetually learn about and take on a leadership role in technology integration as they deem necessary in the H environment. Even when choosing to participate in P or A learning environments, the heutagogical learner retains the power and choice over their own learning (Wark, 2018; Wark & Ally, 2020a, 2020b, 2020c).

A more detailed graphic of the transformative learning and leading (H) phase of the Omni-tech taxonomy is provided to the far right of Figure 2. In this phase, learning to integrate emergent technologies occurs naturally. The learner's emergent technology integration experiences and perceptions dynamically influence each other through reflexive thought, and innate drives to find purpose, achieve mastery, gain autonomy, and innovate within the learner's holistic, natural, omni-learning personal learning environment (PLE). Instrumental reasoning, rational thought, and creative intuition are dynamically employed, enabling the learner to "reflexively interpret experiences and transform perceptions, while simultaneously satiating intrinsic drives for purpose, mastery, autonomy, and innovation" (Wark & Ally, 2020a, p. 1016; see also Wark, 2018).

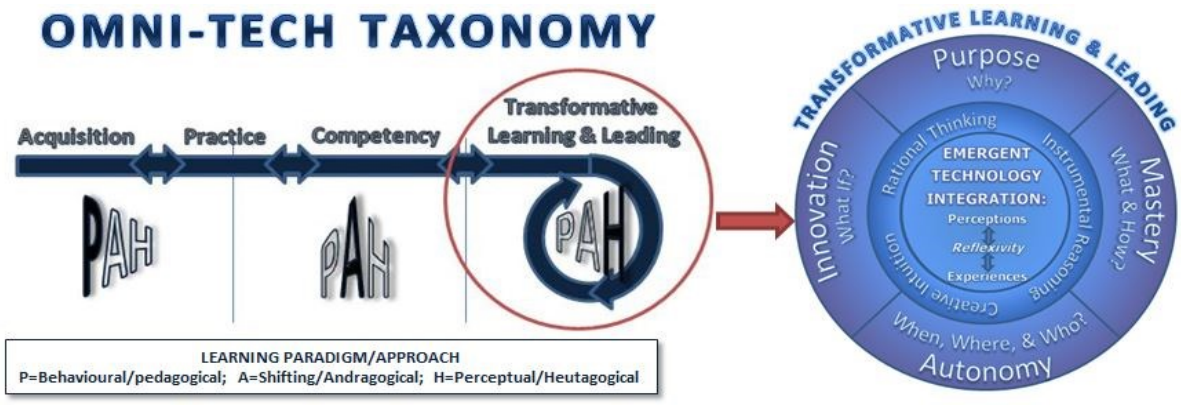

Figure 2:
Omni-tech Taxonomy, illustrating transformative learning and leading details (Wark, 2018).

Paradigm Shift Framework

The Paradigm Shift Framework combines the Paradigm Shift Model and Omni-tech Taxonomy to capture the learner's levels of emergent technology integration within the P, A, and H environments (Figure 3). Briefly stated, the teacher determines what and how technology knowledge, skills, and attitudes are acquired and practiced by the learner in a P environment; assessment reflects efficiency and effectiveness of the learner's progress. The learner engages with other learners, the instructor, and possibly other experts to facilitate the learner's growing competency with emergent technology integration for learning in the A environment. Learning how to use these technologies is no longer a major learning outcome; technologies are simply means for facilitating discourse, critical reflection, and other higher-order thinking skills within the learner's growing learning community (Garrison et al., 2001).

The integration of emergent technologies for learning in the H environment is an ongoing, dynamic, and reflexive process. During this process, "the learner determines: (1) what is learned, (2) how it is learned, (3) why it is being learned, (4) when and where the learning occurs, (5) who is involved in the learning, (6) how the learning can be adapted for use in novel situations, and (7) what learning outcomes and consequences this technology integration may have on the learner, the environment, and collective humanity" (Wark & Ally, 2020a, p. 1017). While engaging in this process, the learner enhances their capacity for transformative learning and leading (Wark, 2018; Wark & Ally, 2020a, 2020b, 2020c). The author developed this framework (including the model and taxonomy) to bind the theoretical, conceptual, and substantive elements of the dissertation. It was subsequently used to guide the research process, to create the research instruments, to analyze the data, and to interpret the findings of this study.

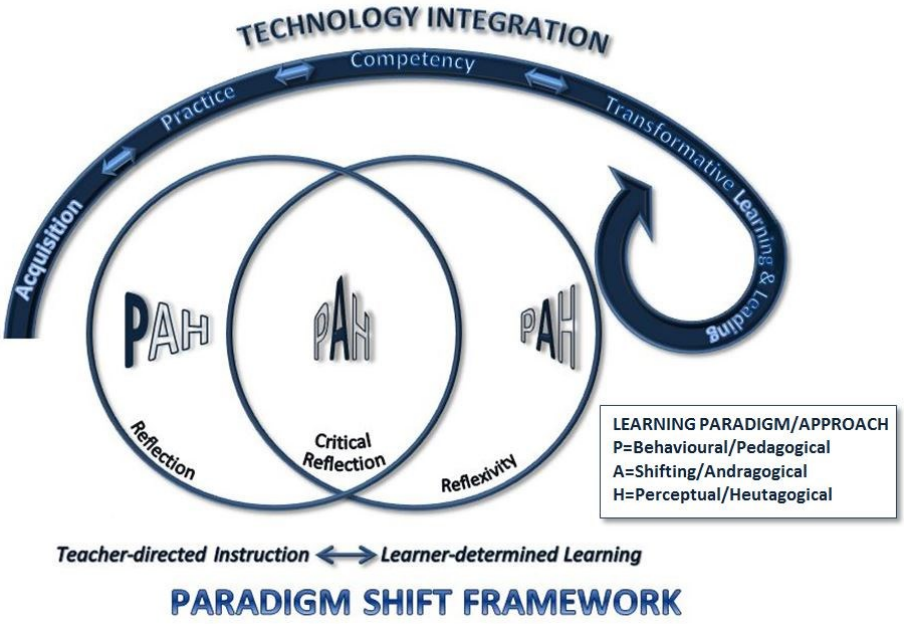

Figure 3:
Paradigm Shift Framework, illustrating the merger of the omni-tech taxonomy (dark blue technology integration arrow at the top of this image) with the Paradigm Shift Model (Wark, 2018).

DATA COLLECTION

Data was collected from 12 volunteer MEd DE student respondents during four-month Fall 2017 semester at an online North American institution. Seven respondents were enrolled in Course A; five were enrolled in Course B. The courses were selected purposively. Course A involved the theory and practice of distance education, including the use of emergent technologies. Course B focused upon mobile learning.

Data from all participants were collected from online quantitative pre-term and post-term questionnaires, and participant-verified early- and post-term qualitative telephone interviews. While not statistically significant, the quantitative data was used to verify, extend, and enrich qualitative data findings (Cohen et al., 2011; Mertens, 2015). A second coder was employed to co-code 25% of the interviews. After the coders established the coding framework together, 17% of the interviews were independently coded. On average, 146 units were coded per sample. Inter-coder reliability was 92%, with a 0.947 Kappa Coefficient, and intra-coder reliability was 93.6%, with a 0.985 Kappa. The coders also separately coded the final qualitative scores for each participant, yielding a 93.3% level of agreement.

Data collected from respondents was supplemented with observations and other notes from the researcher's journal, as well interviews with the two course instructors and information drawn from the public version of the course pages located on the University website.

RESULTS

The study included 35.3% of students who completed both courses and reflected the gender ratios found in both class settings – 75% of respondents were female, 17% were male, and 8% did not select a gender designation. Forty-two percent lived in large urban

centers (population >500,000), and 75% had completed over half of the MEd DE program before participating in the study.

On the pre-and post-term questionnaires, respondents were asked to assess their current level of technology integration for each of 16 emergent technologies on a scale where 0=no response, 1=little knowledge (I know very little about this technology), 2=acquisition (I am beginning to gain the basic skills and knowledge required to use this technology), 3=practice (I am practicing how to use this technology), 4=competency (I am able to use this technology as required for school or work), and 5=capacity (I adapt this technology for use in unique or novel situations). These technologies included: 3D printing, augmented reality, cloud computing, conversational interfaces, educational game technologies, flipped classrooms, interactive whiteboards, learner analytics, mobile learning, massive open online courses (MOOCs,) online learning management systems (LMSs), online social networking, open content, QR codes, tablet computing, and wearable smart technologies.

Averages calculated for all 16 technologies for each respondent indicated that all respondents in both courses were at the early practice level in integrating these emerging technologies for learning at the beginning of the term. As a collective, respondents in both courses who had consistently preferred a P environment throughout the term reported a minor drop to the earliest stage of the practice level by the end of the term. None of these P respondents had voluntarily set a personal emergent technology integration goal for the term.

Respondents from both courses whose paradigmatic preferences appeared to shift during the term collectively reported a slight increase in their practice level with the 16 technologies when the term was over. When the shifting paradigm group was separated into those who: (1) did not set an emergent technology integration goal for the term, (2) set, but did not change their goal, and (3) set and then changed their goal, it was found that those who did not set a goal or set, but did not change their goal, had perceived negligible change in their pre-term practice level with these technologies. Those who set and changed their goal during the term reported a minor increase in their practice level by the end of the term.

Lastly, respondents who had consistently preferred the H environment reported a significant increase to the early stage of the competency level by the end of the term. All of these H respondents had voluntarily set an emergent technology integration goal during the term.

Although the dissertation questions focused upon individual and group results by paradigmatic preference and therefore did not report on class-based results, some differences between the two classes were noted during the data analysis process. At the beginning of the term, respondents in both classes appeared to be fairly evenly distributed between P, A, and H learning environment preferences. Nevertheless, by the end of the term these course-based results changed significantly.

Course A participants' collective preference for a P learning environment early in the term (N=36.3% of Course A respondents; Figure 4) increased by the end of the term (N=37.1%). The second most preferred environment early in the term was H (N=33.1%), while A was least preferred (N=30.6%). However, by the end of the term Course A participants preferred an A (N=34.9%) over an H (N=28%) environment.

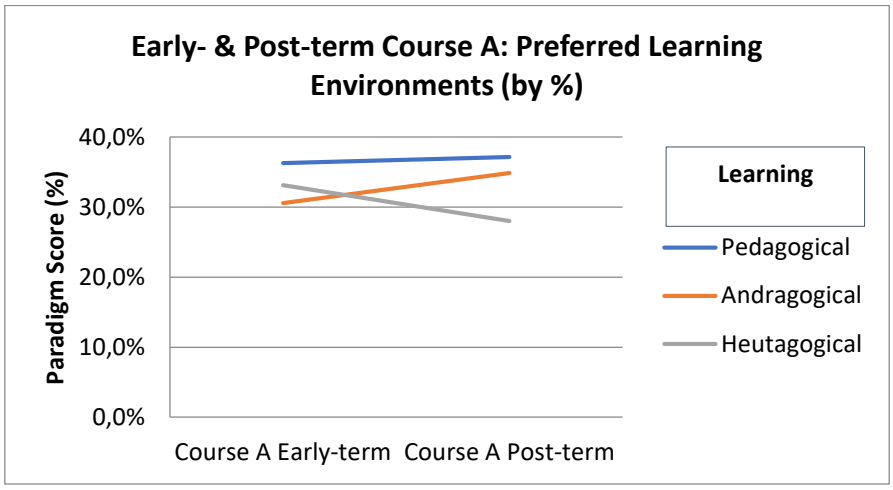

Figure 4:
Early- versus post-term Course A preferred learning environment.

At the beginning of the term, 34% of Course B participants indicated preference for a P learning environment, 34.8% preferred an A environment, and 31.2% preferred an H environment (Figure 5). By the end of the term, 46% of Course B respondents most preferred an H learning environment; 35.2% preferred an A environment, and the remaining 18.8% preferred a P environment.

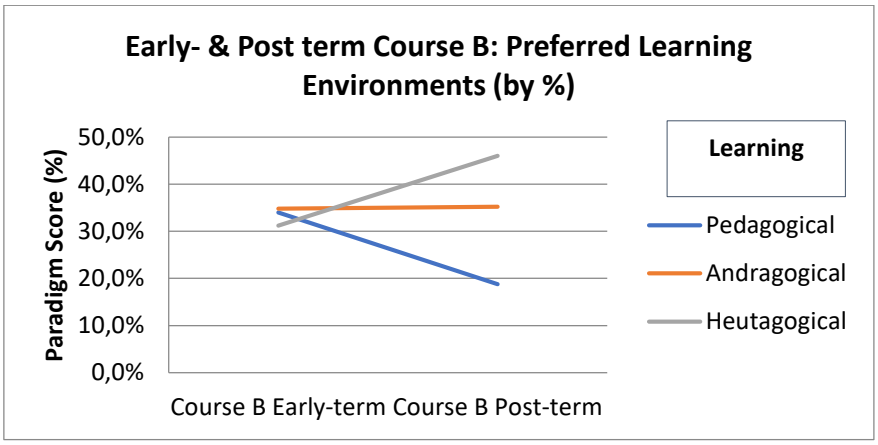

Figure 5:
Early- versus post-term Course B preferred learning environment.

Interviews with the two course instructors and perusal of the public pages containing information about the courses on the University website were combined with respondent data to create a comprehensive profile for each classroom setting. Subsequent examination of the course environments indicated that most course elements were nearly synonymous between Course A and B. Course assignments were the most learner-determined element in both courses. Early in the term, some respondents from both courses told the researcher that they could only choose assignments from a list provided by the instructors. However, the course syllabus webpages stated that learners could adapt assignments with instructor approval. The instructors confirmed that what was posted on the web pages was correct. The one instructor said that in addition to telling students during synchronous sessions that they could approach her with assignment ideas, she also posted asynchronous notification of this to the class Moodle site. The other instructor told a similar story, while noting that some students did not seem to absorb this information early on, but they did once they began to work on group assignments in her course. Furthermore, she said that even though students were given choice and flexibility in assignments, they still came back to her with

a myriad of questions that, had they more fully understood their level of freedom, they would not need to ask.

Both courses provided learners with opportunity to merge real world, often work-related goals and activities with assignment expectations. During her interview, one instructor recalled an assignment example that demonstrated heutagogy in action. A student approached her with a request to do a PowerPoint presentation to show workplace college administrators that the program this student taught was a viable candidate for online learning. The student wanted to apply what she was learning in the course to a professional goal that was important to her. The other instructor said that group assignments in her course were also designed to encourage real-world application of learning for students.

Assignment submission deadlines were also flexible in both courses. In the one course, suggested submission dates during the term were given by the instructor, but students were not required to submit assignments until the end of the term. In the other course, students could negotiate assignment deadlines by sending an email to the instructor detailing suggested submission dates and related reasons. The instructor usually accepted these suggestions.

One of the least learner-determined elements in both courses was assignment grades. Nevertheless, students were given some control over grading. In the one course, 20% of the final grade for each student was determined by that student. The instructor typically accepted that grade unless she felt that the individual was being too hard on themselves. In the other course, group members were asked to grade each other on the two group assignments. The instructor only interfered with these grades if she noticed that a student who had not done much group work was given a grade that they did not deserve.

Course activities were a blend of the two paradigmatic approaches. In both courses, the instructors and students were bound by course timelines; course content and related asynchronous discussions were broken into one or two week segments. While the one instructor did not discuss course readings during her interview, the other said that learners in her class could select the readings that they felt were most relevant to them. (This option was vexing to those who desired a more teacher-directed approach; some respondents in her course voiced concern about missing readings that might affect their course grade.) Students in the one course could respond to readings and postings at any time during that module timeframe. Students who were posting comments that were meant to prompt discussion in the second course were encouraged to post these catalytic comments early during each module timeframe if they wanted to give others time to respond. In this second course, the instructor sometimes moved module deadlines slightly to prompt further discussion.

In one course, students could attend as many synchronous sessions as they desired; however, their self-assigned participation grade was expected to reflect this attendance record. In the other course, four synchronous sessions were mandatory. The fifth was an optional session on mindfulness teaching and learning strategies.

All in all, assignments, activities, and timelines were significantly learner-centered, and in some respects, learner-determined in both courses. It appeared that the instructors were very approachable and open to learner suggestions, ideas, timelines, and goals. The instructors intentionally sought to make learning activities and assignments relevant to other aspects of their learners' lives, and seemed very pleased when students could complete assignments that met course *and* workplace goals. Some student control was given in both courses in relation to assessment and grades; in the one course students appeared to have primary control over one-fifth of their grade, while in the other course, students were asked to grade each other on group assignments.

In some ways, the courses also reflected the behavioural paradigm. Most of the behavioural elements appeared to be institutionally or faculty-driven. For instance, course readings and related activities were set into a module format that disallowed much flexibility in discussion topics or timeframes. To counter these external controls, the instructors attempted to give students as much time as possible to post comments. The instructor who talked about course readings also said that she asked respondents to select the readings that they were most interested in to supplement the mandated list of core readings.

The course syllabus, objectives, outcomes, general assignment areas, assessment, course start and end dates, and related global aspects of the course were also determined through the behavioural-based hierarchical system. Instructors and students in these courses had little to no control over these course elements. Nevertheless, within this strict global environment, both course instructors did what they could to provide a learner-centered, and where possible, a learner-determined instructional environment. To illustrate, while there was little flexibility in course start and end dates set by the program and institutional administrators, both instructors gave the learners substantial leeway to determine their own assignment submission deadlines.

In synthesis, both courses appeared to offer almost the same mix of P, A, and H approaches to teaching and learning within their class environments. Based on this assessment, there appeared to be nothing that could really explain why Course A respondents, as a collective, slightly strengthened their early-term preference for a P environment by the end of the term. However, the moderate increase in some respondents' preference for an A environment might be explained by the instructor's attempt to offer as many learner-centric or learner-determined opportunities as possible within the behavioural paradigm manifested in the current educational system.

What seemed more puzzling was that there was very little difference in the near balance between P, A, and H course profiles in both courses at the beginning of the term, yet by the end of the term the Course B profile had become significantly more H and less P in nature. Nothing in the aforementioned comparative analysis between the two courses seemed to illuminate any noteworthy differences.

A return to respondent-generated data indicated that 43% of Course A respondents had voluntarily set a personal emergent technology integration goal for the course. In contrast, 80% of Course B respondents had voluntarily set an emergent technology integration goal for the term. One possible explanation for this difference could be related to respondents' understanding of the term, emergent technology.

Examination of respondents' interviews showed that many respondents viewed emergent technologies as utilitarian tools, even though all respondent instruments used in the study offered Veletsiano's (2010) much broader definition of the term, emergent technology. The pre- and post-term questionnaires presented the definition before asking respondents to rate their level of integration of the 16 emergent technologies listed in the study. This list of technologies included examples of conceptual, systemic, and innovative emergent technologies in addition to technological tools. Veletsiano's definition was also presented at the beginning of the early- and post-term interview scripts that respondents received two weeks or so before the scheduled interview date. The definition was read to each respondent when each interview began and the respondent was then asked if they had any question about the definition before interview questions were asked. Comments collected during interviews indicated that most respondents referred exclusively to technological tools when discussing emergent technologies, as these following quotes illustrate:

> **The technology is the tool or medium I present my classroom in, the curriculum itself is impacted only by new pedagogies for learning or changes prescribed by the Ministry of Education… [Respondent 1]**
>
> **My goal at the beginning of this course was to be more at ease with mobile technology. I wanted to be using my tablet and cell phone more effectively for learning. I recently bought a tablet about one year ago in preparation for this course. I wanted to learn more about mobile technology and be more efficient with the tool. I wanted to learn more about mobile applications like creating apps. [Respondent 2]**
>
> **What I am thinking of here is relevancy of the applications. Do they have the ability to actually apply from different tools and incorporate them into our work? [Respondent 3]**

One respondent in Course B described how her understanding of the term, mobile learning, had deepened as the term evolved. During her post-term interview, she said:

> **So my initial thought going into the class was that my interest is in instructional design and mobile learning is just a design on a mobile device. But then coming out of the class, I realized that it was a little bit different, more in depth. Mobile technology is a whole other world, a whole other entity in terms of itself, in terms of being able to explore, and all of that.**

Only one respondent reported struggling with understanding emergent technology in the broader sense of the term. In his post-term interview, he said:

> **I still find it confusing, kind of like last time. When I think about the phrase, "emergent technologies," I immediately go to physical tools. Then suddenly I have to backtrack and consider something like ideational or conceptual tools.**

While Course A provided respondents with the opportunity to explore and incorporate the use of emergent technologies (as defined by Veletsianos, 2010), the course objectives, content, activities, and outcomes did not focus upon technological tools. Although Course B was about the conceptual and systemic notions of mobile learning, Course B objectives, activities, assignments, and outcomes were designed to employ the use of mobile devices. If most respondents associated the term, emergent technology, solely with the utilitarian notion of technological tools, this could explain why more Course B respondents set personal emergent technology goals, since Course B incorporated various uses of mobile devices for learning during the term. As other results indicated, respondents who preferred a P environment did not set emergent technology integration goals for the term because the curriculum, instructor, course objectives, and course outcomes did not mandate that they should. To illustrate, when these respondents were asked if they set a personal emergent technology integration goal for the term, one Course A respondent said, "No… this isn't a technology course." Another Course A respondent gave this reply:

> **I did not with this course and I was actually a little perplexed by that question just because it's an online teaching and learning course about online teaching and learning, but it is not really a course specifically about technology. So, it wouldn't be a course where I would set that type of goal because I am not going to learn about new technologies in it.**

On the other hand, those who preferred an H environment set and achieved their personal emergent technology goals because they felt empowered and determined to do so. Thus, it is possible that respondents in Course B collectively increased their preference for an H environment by the end of the term because they perceived that the course enabled them

to: (1) set and achieve personal learning goals with mobile technologies, and (2) understand the conceptual and systemic notion of mobile learning as an emergent technology.

There was one other course element that may have most empowered Course B respondents to not only acquire higher levels of emergent technology integration, but to become more self-determined learners. That was the inclusion of mindfulness teaching and learning strategies in that course setting during the term.

In the final, and optional Course B synchronous session, the instructor discussed a variety of teaching and learning strategies that she had initiated during the term to help learners become more mindful. Some of the mindfulness techniques that the instructor employed were strategies such as connecting with students on a regular basis; offering apps that helped learners stay connected with other members of the class, stay organized, remain current; and helping students to incorporate other life events, goals, and activities with course-based events and outcomes. All synchronous sessions started with a short personal meditation period, where students learned to set aside external interferences and demands to focus on being present and in the moment. They were asked to identify reasons for taking the course that were personally meaningful and to discuss personal goals that they hoped the course would help them to achieve. They were taught mindful listening by observing how the teacher listened mindfully to them and then practicing this strategy when working with others during the course.

In an unpublished action research project on mindfulness undertaken by the Course B instructor and this author, another group of students enrolled in the same course at a later date described the profound effect that these mindfulness teaching and learning strategies had on them. Many said that they were unaware of any personal goals when they enrolled in the course. Through patient mindful practice, course participants helped each other identify personal goals and keep abreast of progressive development towards that goal as the term unfolded. Students also said that a number of the teaching and learning strategies, including apps introduced by the instructor and other learners, helped them focus on the task at hand and organize their lives, while significantly reducing their stress level. More importantly, these respondents reported that the mindfulness strategies they employed as a result of taking this course helped them to gain control over their own learning, as well as other aspects of their lives. Given this insight into how this one unique Course B factor affected another group of learners, it was quite possible that this factor had great influence in the development of a more learner-determined class profile by the end of the term.

CONCLUSION

This paper has presented a comparative analysis of preferred educational paradigms in two MEd DE courses at an online North American institution during one four-month term in 2017. The data used for this presentation were derived from a doctoral dissertation that used a critical pragmatic research paradigm and a transformative mixed methods methodology to explore what educational paradigm most empowers learners to acquire higher levels of emergent technology integration for learning on demand. Twelve graduate students volunteered to join this study. A Paradigm Shift Framework (Wark, 2018) was designed to create quantitative online pre- and post-term questionnaires, as well as early- and post-term qualitative interviews to capture these participants' paradigmatic preferences and their perceived levels of integration mastery with 16 emergent educational technologies throughout the term.

The study considered two disparate epistemic views on the source of human knowledge (that is, external, objective world or subjective, innate human perceptions), the educational paradigms associated with these views (behaviourism versus perceptual

learning), and the learning approaches employed to translate these theories into daily educational practice (pedagogy versus heutagogy; Emery, 1981; Hammond et al., 2011; Hase & Kenyon, 2001, 2013). At the practical level, the most significant difference between these epistemic stances, paradigms, and learning approaches was who retained the locus of control over learning – the teacher or the learner (Wark, 2018).

The most significant finding was that while all respondents reported being at the early practice level with integration of the 16 emergent educational technologies when the term began, their end-of-term integration levels varied remarkably. Those who preferred a perceptual learning paradigm/heutagogical approach acquired an early competency level with these emergent technologies, while those adhering to a behavioural paradigm/ pedagogical approach reported a slight decrease in their pre-term practice level by the end of the term.

Collectively, respondents in Course A and Course B indicated a slight preference for a behavioural paradigm/pedagogical learning approach early in the term. By the end of the term, the preference for the behavioural paradigm/pedagogical learning approach had increased slightly among Course A respondents, while the preference for a perceptual learning paradigm/heutagogical approach had significantly increased and the preference for a behavioural paradigm/pedagogical approach had significantly decreased in Course B.

Both course instructors gave students considerable choice among course aspects within the instructors' realm of control. Examples of such aspects included offering numerous assignment topic choices, opportunities for students to tailor assignments to suit unique goals, flexible deadlines for assignment submissions, and some self- or peer-grading options. Other, more global aspects of both courses, such as the course syllabus, module delivery timelines, and assessment allocations were controlled by department faculty, the institution, or the government, so could not be changed by the instructor without consent from these educational stakeholders. Thus, it was determined that both class environments manifested similar aspects of both paradigms and related learning approaches.

Exploration as to why such differences in respondent paradigm preferences occurred within and between two course settings that appeared to be notably similar in nature led to two tentative conclusions. First, examination of respondents' interview discussions showed that many respondents viewed emergent technologies as utilitarian tools, even though all respondent instruments provided Veletsiano's (2010) definition of the term, emergent technology. While Course A provided respondents with the opportunity to explore and incorporate the use of emergent technologies, the course objectives, content, activities, and outcomes did not focus specifically upon any technological tools. Although Course B was about the conceptual and systemic notions of mobile learning, Course B objectives, activities, assignments, and outcomes were designed to employ the use of mobile devices. This might have explained why more Course B respondents set personal emergent technology goals. This decision, in turn, may have affected their paradigmatic preferences during the term.

The second element that may have increased participants' preference for a perceptual paradigm was the use of mindfulness teaching and learning strategies in Course B. These strategies sought to help learners focus on the present environment, identify their personal reasons for pursuing education and enrolling in the course, organize their busy lives, and gain control over their personal learning experience. Although this author was unaware that these techniques were being employed in the Course B setting at the time of the dissertation study, preliminary analysis of subsequent research with another group of students from the same course during a subsequent term indicated a marked increase among respondents in that study to become more heutagogical learners as the term progressed.

The relationship between respondents' conception of the term, emergent technology and the employment of mindfulness teaching and learning strategies in Course B may have individually or collectively impacted the preferred learning paradigm profiles in both courses. It is concluded that if learners are able to recognize the possibility of learning about an emerging technology in a course, they are more likely to set a personal emergent technology goal while enrolled in that course. Secondly, if mindfulness strategies encourage learners to set, assess, adjust, and achieve personal learning goals, such learners are more likely to set personal emergent technology integration learning goals during the term.

Future research on each element must be undertaken before more definitive conclusions can be drawn. To this end, it is recommended that further research employing the term, emergent technology, includes measures to ensure that participants' conception of the phrase aligns with the study definition. One approach could be to engage in a discussion that involves asking participants what the term means to them; another might include listing specific examples of various emergent technologies that they may be familiar with. Care would have to be taken, though, so that participants did not feel offended, intimidated, or naïve during the process of clarifying the term. Presentation of examples may also influence the direction and focus of participants' subsequent responses, so the inclusion of examples must be carefully considered before being added to study instruments. More research is also needed to determine to how profound and enduring the inclusion of mindfulness teaching and learning strategies in a formal online course are on learners' ability to achieve personal emergent technology integration goals for learning on demand.

The potential influence of being better able to identify emergent technologies, practicing mindfulness teaching and learning techniques, or both on learners' choice to set and achieve personal emergent technology integration goals is significant because, according to the dissertation results, the relationship between preferred learning paradigms and personal goal setting impacts the level of emergent technology integration that students achieve. In brief, the more empowered and self-determined a learner is, the higher the level of emergent technology integration the learner attains. Adopting a perceptual paradigm and heutagogical approach to learning will assist educational stakeholders, *especially learners*, in developing learners' capacity to perpetually and reflexively integrate appropriate emergent technologies in this world of unpredictable, dynamically-fluxing technologies and educative practices.

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