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HYPERCONNECTED SCHOOL LEADERSHIP: SHARED EXPERIENCES

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## Hyperconnected School Leadership: Shared Experiences

Chairperson: Dr. William P. McCaw

Leaders remain perpetually connected to their work because of the rapid advancement of information technology. This research, using a qualitative approach, explored how increased connective technology is affecting school leaders with the central question: *How is hyperconnectivity experienced by school leaders?* Using personal interviews, the lived experiences of fifteen international middle and high school principals with one-to-one student-to-device programs were collected. Raw transcriptions of their experiences were analyzed using the descriptive phenomenological approach as outlined by Giorgi (2009). This approach allowed for the data to be reduced into a single narrative description shared by all participants indicating the essences of their lived experience as hyperconnected school leaders.

This shared narrative highlighted complex and paradoxical experiences associated with how these school leaders interact with technology. Their experiences indicated that work-life balance for hyperconnected leaders required strong personal boundaries and skillful use of connective technologies. Examples of effective leader development of self and community highlighted, paradoxically, the need to unplug to effectively deploy connected technology within their leadership practice. Conversely, this study also showed how leaders can be controlled by connectivity. They associated their roles as responsible school leaders with perpetual connectivity; in consequence, they fused their work and home lives, experienced increased stress, and struggled with work overload. These results imply that international school principals are impacted by increased connectivity in different ways. Findings from this study indicate those leading hyperconnected schools must pay attention to how connectivity is affecting themselves and members of their school communities. Principals must protect themselves from the increasing demands upon their attention that constant connectivity presents in order to make mental room for the self-reflection and creativity needed to provide novel solutions and approaches towards their leadership work.

## **Acknowledgments**

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## Chapter One: Introduction to the Study

Look around; how many individuals do you see looking at a screen? The number of connected devices now outnumbers people on earth (Earle, 2015; Evans, 2011; International Telecommunications Union [ITU], 2013). Technologies that connect are everywhere, and the volume and velocity of growth in one's connected life today is startling. According to Overbye (2012), information “tumbles faster and faster through bigger and bigger computers down to everybody's fingertips, which are holding devices with more processing power than the Apollo mission control” (para. 3). Such technological advancements have led us to a new reality referred to as hyperconnectivity (Fredette, Marom, Steinert, Witters & Lucent, 2012).

Educational reform efforts are at the center of interpreting and successfully transitioning to a hyperconnected, knowledge-based society (Friedman & Mandelbaum, 2011; Goleman & Senge, 2014; Hallinger & Murphy, 2013; McLeod, 2015; Robinson, 2006; Wagner, 2008; Zmuda, Kuklis, & Kline, 2004). Such reform is widely advocated as a necessity to help maximize the best and minimize the worst of what connectivity has to offer (Dufour & Fullan, 2013; Fullan, 2012; Gardner & Davis, 2013; Marzano, Yanoski, Hoegh, & Simms, 2013; Levin & Schrum, 2012 & 2014; McLeod, 2008; Palfrey & Glasser, 2008; Richardson, 2013; Schrum & Levin, 2009, 2011, 2012, 2015 & 2016; Zhao, 2014). School principals with packed schedules (Donaldson, 2011), have been required to balance their myriad responsibilities with the increasing demands of a hyperconnected world. According to Hallinger and Murphy (2013), “Scholars have, for many years, described forces that draw principals *away from rather than toward* engagement in instructional leadership” (p. 6). Understanding their relationship with technology is necessary for school leaders to prioritize their time for school improvement. This school leadership is especially needed to prepare students to thrive in a digital society (Goleman, 2013; Palfrey & Gasser, 2012).

In general, we have absorbed connective technologies into our daily lives in ways that are complex and invasive (boyd, 2014; Case, 2010; Turkle, 2012). Fortunately, we now know more about how youth have engaged with information technology (boyd, 2011; Livingstone, 2008; Ito et al., 2009), and the overly simplified and misguided rhetoric of digital immigrants and digital natives that has clouded much of the conversation regarding technology in education has been debunked (boyd, 2014; Palfrey & Glasser, 2008). Alongside this clarity is the overlooked need for expansion beyond teacher development related to technology to include school leaders (Flanagan & Jacobsen, 2003). These changing paradigms have exposed acknowledgment that living, learning, and leading today has an added layer of complexity brought about by technological change, an understanding that needs more attention (Fullan, 2012).

A few international school principals have experienced hyperconnected school leadership since the early 2000's. Free from government reform, funding problems, and time consuming standardized testing directives, international schools communities have the capacity to prepare globally connected students with ubiquitous access to technology (Hayden & Thompson, 2008). Starting in the early 2000's a handful of school leaders around the world pioneered hyperconnectivity as the learning culture by embracing one-to-one computing, digital communication, robust Wi-Fi networks, and unfiltered Internet access (Bebell, Luthra & Chaudhuri, 2014). These school communities (and, in consequence, their leaders) have been hyperconnected for up to a decade, when most other educational communities have only recently started to reform device policies, such as cell phone access in class (Rich & Taylor, 2014). Notably little about these international school leaders' experiences has been shared with the greater educational community.

The majority of previous educational reforms and research indicated that adding technology was the solution with little foresight for the ways technology reshaped an

individual's and even a whole community's existence (Zhao, 2014). To date, how leaders lived, led, and learned with such devices from a subjective view was absent from the general study of leadership. Previous studies that focused on leaders and their use of connected technology, showed how leader-work-overload caused stress and a lack of work-life balance in corporate business settings (Butts, Becker, & Boswell, 2015; Chesley, 2014; Cousins & Varshney, 2009; Derks, van Duin, Times, & Bakker, 2015; Derks, Bakker, Peters, & van Windgerdon, 2016; Harris, 2014; Mazmanian, Orlikowski, & Yates, 2013; Middleton, 2007). Before our age of hyperconnectivity, educational literature also showed these pervasive concerns for school administrators: stressful working conditions and lack of work-life balance. Hines, Edmonson, and Moore (2008) found the themes of stress and anxiety emerged when exploring high school principals' use of email. This study pointed out the need to further explore leaders' use of connected technology in school settings.

### **Statement of the Problem**

To lead learning communities that prepare students to thrive in today's ubiquitously connected society (one where machines and relationships are virtually connected on a global scale), school leaders must experience hyperconnectivity. If these school leaders do not appropriately navigate hyperconnectivity, there is evidence in the literature that their physical and mental well-being may be negatively impacted. In consequence of this dysfunctional relationship with digital technology, leaders can erode the agency they need to foster relevant places of learning. Little research exists to help school leaders understand and consider the strategies that may assist navigation in an increasingly digitized role.

Our increasingly digitized world is complicated (boyd, 2014; Wells, Maxfield & Klocko, 2011), with individuals being asked to process five times as much information each day as they did in 1986 (Goleman & Senge, 2014). Levy (2006) pointed out that "there are natural neurological limits to our attention capacity" ("Environmentalism," para. 3), and

reaching those limits “in today’s technology-rich, speed-obsessed, information-saturated-world is taking its toll on us” (“More, Faster, Better,” para. 5). Leaders who lack the ability to conceptually and technically navigate hyperconnected environments are faced with a rush to keep up, or find focus, as they struggle in a constant state of emergency to manage the information glut, blurred boundaries between work and home, and superficial connections that overtake constructive conversations (Rushkoff, 2013; Shirky, 2010; Turkle, 2012; Weinberger, 2012). This leaves individuals overwhelmed and overloaded with information, or as Rushkoff (2013) described it, in a constant state of “present shock” (p. 3).

*Present shocked* school leaders face a dangerous downward spiral toward chronic stress, lack of sleep, and are mentally unable to keep up (Rushkoff, 2013). Such a state leaves little capacity for reflection or renewal to respond to the demands of their roles as leaders of learning, and hinders a leader’s ability to lead reform efforts (Hoerr, 2011a). Taking this one step further, so little time for “self-discovery” on the part of the leader can create a situation where they do more harm than good (Bennis, 1997). To Bennis (1997), mismanagement of self on the part of the leader can be toxic and infectious as they “give themselves heart attacks and nervous breakdowns” and become “carriers” to those around them (p. 86).

Behavioral patterns on the part of the leader, including technology, are cultural artifacts that highlight values within an organizational culture (Lawson & Shen, 1998). The role of the connected leader is interwoven with technological understanding and skill (Anderson & Dexter, 2005; Davis & James, 2013; Dexter, 2011; McLeod & Lehmann, 2011; Richardson, Bathron, Flora, & Lewis, 2012; Schiller, 2003), and the line between technology and self is thin and growing thinner (Evans, 2011) in ways most do not attend to (Turkle, 2011). According to Levintin (2014):

When our computer or smart phone starts to run slowly, we might buy a larger memory card. That memory is both a metaphor and a physical reality. We are off-

loading a great deal of processing that our neurons would normally do to an external device that then becomes an extension of our own brains, a neural enhancer. (p.xv)

While the processing power of Levy's "neural enhancer" can be expanded with the click of a button, that of the human brain is physiologically limited (Levitin, 2014). Faced with the exponentially increasing power of the technology surrounding them, school leaders face stresses that threaten their physical and mental health and the cultures of the organizations they lead. Culture defines where attention is directed, and meaning within an organization, and cannot be viewed separate from leadership (Schein, 2004).

Since McLeod, Bathon, & Richard (2011) articulated only "a few researchers have begun to investigate what it means to connect the spheres of school leadership and technology" (p. 288), there is little evidence that things have changed. This lack of connection indicates how leaders may neglect giving essential guidance for today's increasingly hyperconnected school communities. In consequence, these communities become vulnerably hyperconnected while learning needs are left to chance. Without robust visionary instructional leadership, a culture of fear, disorientation, and maddening disruption overshadows the benefits of increased digitization to empower and transform learning communities (McLeod, 2015; Sheringer, 2014). To overcome hyperconnected challenges, leaders must understand their relationship to technology, lest they be overwhelmed and overloaded (Kelly, 2010; Levitin, 2014; Rosen, Cheever, & Carrier, 2012; Turkle, 2012). To McLeod (2015), nurturing a learning culture that empowers students and teachers to take risks, embrace innovation, and transform learning with technology is "fairly hard to do if we're technology-hesitant or unknowledgeable about the educative value of technology ourselves" ("Fear", para. 5). In such a situation, leaders can make uniformed and ill-equipped decisions, risking their credibility and more importantly, their learning communities.

## **Purpose of the Study**

By studying the lived hyperconnected experiences of participants leading at international middle and high schools with one-to-one student-to-device programs, insights into the individual leader's relationship with technology emerged. These insights showed how hyperconnectivity is affecting school leaders. Therefore, the purpose of this qualitative descriptive phenomenological study was to analyze, describe, and present an understanding of leadership from the shared experiences of international school leaders in hyperconnected learning environments at the middle and high school levels. These shared experiences were sought and analyzed to inform school leaders as they experience hyperconnectivity.

Individual stories of the participants were collected in the context of the phenomena of hyperconnectivity by using a descriptive phenomenological design as espoused by Giorgi (2009). Taking a subjective-psychological perspective of the participants allowed the data to include thoughts, impressions, feelings, interpretations, and understandings of participants, along with behaviors and reactions. With such data, a description of the human experiences with technology associated in the context of school leadership from those leading hyperconnected one-to-one computing environments in accredited international middle and high schools was formed.

This examination of lived experiences maintained a consistent awareness to the intimacy in which these individuals now interact with technology (Turkle, 2011). In *The Second Self: Computers and the Human Spirit*, Turkle (1984) articulated the following, "Most considerations of the computer concentrate on the 'instrumental computer,' on what work the computer will do" (p. 19). To Turkle, there is a need to focus on "something different, on the 'subjective computer.'" This is the machine as it enters into social life and psychological development, the computer as it affects the way that we think, especially the way we think about ourselves" (p. 19). By embracing a humanistic perspective and focusing on the human



connection to technology, certain sensitivities to the school leader's relationship to technology were maintained to better understand and describe how school leaders learn, lead, and live in this new era of hyperconnectivity.

### **Central Question**

A single overarching question, referred to as a central question by Creswell (2007) informed this qualitative study. The following central question was used: How is hyperconnectivity experienced by school leaders? This question purposefully guided inquiry to help describe the lived experience of the participants and was further explained in Chapter Three: Methodology.

### **Definitions of terms**

The following definitions of terms from scholarly sources clarify the use of each term in this study. For the purposes of this study, the following terms were defined:

*Accreditation institution.* According to Wellman (1998), "Accreditation is a nongovernmental peer process designed both to assure minimum standards and to help institutions assess and improve themselves" (p. 3). This study includes five accreditation institutions that facilitate a process as defined by Wellman: The Council of International Schools (CIS), East Asia Regional Council of Schools (EARCOS), European Council of International Schools (ECIS), New England Association of Schools and Colleges (NEASC) and, Western Association of Schools and Colleges (WASC).

*Agency.* To Feldman and Pentland (2003) agency in the ontological sense is, in part, embodied within organizational routine and is "the actual performance of the routine by specific people, at specific times, in specific places" (p. 95).

*Cloud computing.* According to Mell and Grance (2011):

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers,

storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. (p. 2)

*Digital leadership.* To Sheninger (2014):

Digital leadership takes into account recent changes such as ubiquitous connectivity, open-source technology, mobile devices, and personalization. It represents a dramatic shift from how schools have been run and structured for over a century, as what started out as a personal use of technology has become systematic to every facet of leadership. (pp. xx-xxi)

*High School.* According to *Merriam Webster's dictionary* (n.d), a high school is, “a school usually including the ninth to twelfth or tenth to twelfth grades.”

*Hyperconnectivity.* According to Fredette et al. (2012), hyperconnectivity “refers to the myriad means of communication and interaction, but also to its impact to both personal and organizational behavior” driven by, “the exponential growth of mobile devices, big data, and social media” (p. 3).

*International School.* The International Association of School Librarianship asserted that international schools have the following characteristics that distinguish them from other learning institutions: (1) transferability of the student’s education across international schools, (2) moving population, (3) multinational and multilingual student body, (4) an international curriculum, (5) international accreditation, (6) transient and multinational teacher population, (7) English as the language of instruction (Skirrow, 2009).

*Nonprofit.* According to *Merriam Webster's dictionary* (n.d.), a nonprofit is an origination, “not existing or done for the purpose of making a profit.”

*Middle School.* According to the *Oxford Dictionary* (n.d.) a middle school is, “A school intermediate between an elementary school and a high school, typically for children in the sixth, seventh, and eighth grades.”

*One-to-one computing.* Penuel (2006) described one-to-one computing as having three core features:

(1) providing students with use of portable laptop computers loaded with contemporary productivity software (e.g., word processing tools, spreadsheet tools, etc.), (2) enabling students to access the Internet through schools' wireless networks, and (3) a focus on using laptops to help complete academic tasks such as homework assignments, tests, and presentations. (pp. 330-331)

*Present Shock (adjective).* “The human response to living in a world where everything happens NOW. It’s a real time always on existence without any sense of beginning, middle, or end” (Rushkoff, 2013, p. 6).

*School Leader.* Individual building leaders at the middle and high school levels most commonly holding the title of Principal.

*Subjective Computer.* According to Turkle (2005), “This is the machine as it enters into social life and psychological development, the computer as it affects the way that we think, especially the way we think about ourselves” (p. 19).

*Technium (noun).* To Kelly (2010):

The technium extends beyond shiny hardware to include culture, art, social institutions, and intellectual creations of all types. It includes intangibles like software, law, and philosophical concepts. And most important, it includes the generative impulses of our inventions to encourage more tool making, more technology invention, and more self-enhancing connections. (p. 12)

## **Delimitations**

This study was delimited to middle and high school leaders in nonprofit, accredited, international schools, that embrace one-to-one computing technology. The first delimitation was the purposeful selection of participants for this study. Participants selected were middle

or high school principals due to additional layers of hierarchy. Generally, secondary schools are different from primary schools in the age of their students, size, and organization into subject departments (Bendikson, Robinson & Hattie, 2012).

The second delimitation was the type of school the participants' lead, which were nonprofit, accredited international schools. All participants were selected for this study from schools in good standing with one of the following accreditation institutions: CIS, EARCOS, ECIS, NEASC, and WASC. The international school context raises specific multicultural and multilingual issues that underpin additional challenging dimensions for school leaders (Hayden & Thompson, 2005).

Finally, because the focus of this study was directly related to technological change associated with the increased digitization of schooling, participants were those leading digitized schools with one-to-one computing initiatives that were at least five years old. This third delimitation helped assure access to ubiquitous Wi-Fi and individual devices for members of the school communities participants were leading.

### **Limitations**

This study was limited in a number of ways, first, the general nature of hyperconnectivity is changing rapidly. In its infant stages, many school leaders know little about the complexity of this new way of existing. The conclusions from this study's findings should be applied to similar schooling context (of middle and high school communities). Finally, as with any phenomenological study, self-report style data acquired through interviews is always subject to memory decay, alterations, or participant's response errors (Giorgi, 2009).

### **Significance of the Study**

Increased information communication technology (ICT) has led to a new normal known as hyperconnectivity. Such connectivity disrupts everything (Jarvis, 2010).

Conventional aspects associated with effective school leadership are directly influenced by newly added concerns related to hyperconnectivity, leaving a complex new reality for leaders to pioneer. However, little research literature exists for them to consult for guidance.

Leading without a clear perspective on this hyperconnected universe, school principals risk causing harm to themselves and the organizations they lead by eroding pathways for relevant student learning.

How leaders have engaged with networked technology can cause purposeful and focused engagement with hyperconnectivity, or it can cause sporadic distracted present shock. This dichotomy places leaders at a threshold where their effectiveness depends on understanding their relationship with technology; however to date, we have insufficiently studied this relationship. This study aimed to address these problems by providing insight into how school leaders navigate the complex phenomenon of hyperconnectivity. As a result of this study, school leaders and the communities they lead may be healthier and better equipped to positively impact student learning. By analyzing, describing and presenting shared experiences of those that have been navigating the complexities of hyperconnected leadership for almost a decade, this study provides valuable insight for leaders facing the reality of hyperconnectivity.

Much of the past three decades of research related to school leadership and technology has been far from holistic. Turkle (2005) advocated for humanistic exploration and the need to look “beyond all the things a computer does for us (for example, help with word processing and spreadsheets) to what using it does to us as people” (p. 11). The significance of this study lies in the opportunity to pause. Pause to explore the human side of technology through the lived experiences of those that have the perspective of hindsight. This exploration assists our understanding as every part of our lives is being changed by new technologies.

## Summary

Technological change lays a new foundation for the ways we live and learn. Leaders must make sense of such change, as well as help others to do the same (Fullan, 2001; Homer-Dixon, 2000). The introduction to this study outlined the need for principals to be connected school leaders. It articulated the complexities leaders face brought about by societal shifts toward connectivity, educational reform linked to increased technology in schools, and learning as it changes due to increased access to information. Hyperconnected school leadership was not new to a few international school principals who have been navigating such environments since the early 2000's. To that end, this qualitative study aimed to clarify the phenomenon of hyperconnected leadership by analyzing, describing, and sharing these individual's experiences. Such analysis on the conditions of their experience illuminated how school leaders understand and navigate hyperconnected leadership. This new knowledge and understanding informs school leaders as their role increasingly is impacted by hyperconnectivity.

Chapter Two provides review of relevant literature regarding hyperconnectivity and hyperconnected leadership in education. Given the broad topics of technology, change, and leadership, the literature review examines scholarly works focused on the evolution of technology and learning, and its impact on leadership. More specifically, literature situated closely to this study's central question is examined to gain an understanding of existing research and justify the need to study this particular aspect of leadership impacted by technological change.

## **Chapter Two: Review of Related Literature**

Rapid technological changes significantly modify the core business of schools, and today's school leaders are leading educational transformation with advanced technology (Zhao, 2014). More technological change indicates differences in school leadership, of which we need to keep up with to meet current needs in our society. This study aimed to analyze, describe, and present a new understanding of leadership from the shared experiences of international school leaders in hyperconnected learning environments at the middle and high school levels. This chapter consists of five major sections, first (1) coverage of the historical and linguistic evolution of technological change starts the readers down the complex road of (2) technological related disruption of just about everything including education. Next, (3) paradoxes related to technological change are covered with specific examples of what hyperconnectedness presents to individuals including (a) wellbeing issues, (b) the thinning line between technology and self, (c) changes in communication and (d) the need for mindful navigation. Coverage of these paradoxes set the ground work for further articulation of the (4) changing role of the school leader including: educational leadership theory and an increased focus on technology related to school leadership including changes in leader behavior. Finally, (5) the humanistic need to view technological change is included to ground the framework of this study.

This review of related literature starts by presenting an overview of technological changes to minimize ambiguity and then moves to an inspection of the vast disruption such changes present to both institutions and individuals. Next, coverage of up-to-date works on humanistic aspects of technology is articulated to uncover wellbeing issues related to increasing connectivity. A particular emphasis on the humanistic perspective of how technology shapes our lives and the phenomenological approach to qualitative research are explored to build the grounds for the correct fit between this approach and the focus of this

study. The first section addresses the broad, messy, and complex topic of technological changes.

### **Technological Changes**

Information is now a commodity bought and sold, and is more of a problem than a solution (Weinberger, 2012). The concept of information overload has been around since the time of Gutenberg. Moveable type led to more printed material than one could possibly consume. Photocopiers made distribution of existing information easier, and digitization created the circumstances of virtually no barriers previously associated with publishing (Hemp, 2006; Shirky, 2008). According to Burke (1994), “improvements in printing, communications, and transportation created a bundle of opportunities and frustrations” (p. 99). Levy (2008) later called for the problem not being limited to the increase of information when he articulated, “it could be argued that the sheer amount of information in the world isn’t in and of itself the problem” (p. 3); instead, the problem is that we are living in an increasingly digitized world in ways that demand our brains process massive amounts of information all at once (Levy).

In 1945, Bush presented the problem of information overload, and a solution with his personal information device, memex in his seminal work, of *As We May Think* (Levy, 2008). His work was one of the first pieces to describe both the problem of information overload and a device as part of the solution. Bush’s description of collective work parallels the hypertext world of online communication today. This new level of connectivity allowing for more collective work is what Bush (1945) alluded to with his device memex; a tool allowing for collecting and linking information together. To Bush, such a tool allowed for one to build “a trail of his interest through the maze of materials available to him” (p. 8).

The memex type of technical tools that Bush had hoped for are now in our pockets, yet increased connectivity and access to shared information did not solve the information



overload problem as he hoped, instead it has made it worse. To many, his ideas foreshadowed computer supported cooperative work. Simpson, Renear, Mylong, & van Dam (1996) described such foreshadowing as, “the potential of information technology to alter the foundations of the society in which we live and to provide solutions for the problems that may threaten our well-being, if not our very existence” (p. 51). Toffler’s 1970 work, *Future Shock*, referred to this new ecology emerging from the “great growling engine of change-technology” (p. 25) with warnings of rapid technological change spinning society and ourselves out of control. Nearly four decades after Toffler’s work warned of a looming crisis, Shirky announced in 2010 that “The loss of control you fear is already in the past” when giving advice to the United States Department of State on matters of digital diplomacy (as cited in Lichtenstein, 2010, para. 30).

Technology advancement came to individuals at a rapid pace in the last part of the twentieth and first part of the twenty-first centuries. Telephones became not only cordless, but also wireless. Computers increased in capacity and decreased in size. Processing hardware that once filled an entire room now is included in pocket-sized mobile phones, watches, and eyeglasses. Video transitioned from passive to participatory and social media trumped traditional media (Shirky, 2008). Massive amounts of data and applications are now available via a complex combination of wirers, transmitters, connecting servers around the world known as “the cloud,” and have largely dissolved the concept of time and space as we know it (Fredette et al., 2012; Jarvis, 2010; Rushkoff, 2013). According to Kelly (2010), “despite its power, technology has been invisible, hidden, and nameless” (p. 6).

In 2010, Kelly examined the language used to articulate the struggle related to technological change. His work uncovered evidence of disruptive technological change leading back to the beginning of modern language. Homer used the term *ingenuity* to describe King Odysseus as a master of skill and craft, and Aristotle’s treatise *Rhetoric* joined

*techne* with logos (words, speech, and literacy) to yield the term *technologos* (Kelly, 2010). According to Kelly, Aristotle referred to *technologos*, “concerned with the ‘skill of words’ or the ‘speech about art’”, and “for the next thousand years, art and technique were perceived as distinctly personal realms” (p. 7). In addition, White (1940) described such technological power:

The glory of the later Middle Ages was not its cathedrals or its epics or its scholasticism: it was the building for the first time in history of a complex civilization which rested not on the backs of sweating slaves or colliers but primarily on non-human power. (p. 141)

The use of the word technology varies widely, and often it is used as a synonym for hardware—machines; equipment, or according to Ely (1995), “at best, some think of technology as hardware + software but not many people take it further” (p. 5).

Beckmann’s (1777) work brought to light the “systemic order,” and the building upon previous inventions as means of such technological change. According to Kelly, “At some point in its evolution, our system of tools and machines and ideas became so dense in feedback loops and complex interactions that it spawned a bit of independence” (p. 12). This loop between development and scientific work lacks “scientific knowledge” aside from design. Such vehicles that deliver the software as a mobile phone, a tablet computer, or heart rate monitor are what can be applied to “practical matters;” and according to Ely (1995), “what is delivered is not knowledge, but data and information: there IS a difference!” (p. 3).

One does not have to look far to see the terms technology combined with knowledge as if the machines are thinking for themselves. Advancements in data connectivity through cloud computing is in fact bringing this closer to reality. Objects now talk to other objects without human-to-human or human-to-computer interaction through sensors and networks. This, to Kelly (2010), is the “greater, global, massively interconnected system of technology

vibrating around us” (p. 10). This whole system of individual technologies accelerating together is what he coined as the new term, *technium*.

Kelly (2010) was not the only one searching for language to describe technologies and our interaction with them. The steady stream of new technology related words added to dictionaries exemplifies this search for language. The word additions related to the social media platform Twitter alone (tweet -2009, retweet-2011, tweetable and refollow- 2012, subtweet -2014) show that we are interacting in ways with technology and simultaneously building the linguistics to describe our actions. Today, in the post-industrial era surrounded by information and technologies that promote ubiquitous access to such information, examples of individualist language is emerging to describe our current existence with technology, and yet, we still grapple with understanding the effects of such change (Kelly). Kelly (2010), Rushkoff (2013) and Turkle (2012) all argued that we must look to better understand facets of technological change that have lead us to our hyperconnected present.

Hyperconnectivity as a term, according to Fredette et al. (2012), “refers to the myriad means of communication and interaction but also to its impact to both personal and organizational behavior” (p. 113). Hyperconnectivity driven by the explosion of mobile devices, big data, and social media now makes ubiquitous computing a true reality (Anderson & Rainie, 2012). According to Sanou (2015), “In 2015 there are more than 7 billion mobile cellular subscriptions worldwide, up from less than 1 billion in 2000” (p. 1). Globally, the number of individuals using the internet has increased at a similar rate, from 400 million users in 2000 to 3.7 billion in 2015 (ITU, 2015). By 2020, it is estimated that there will be 50 billion or more connected devices in the world, and the number of active Facebook users will be close to reaching a billion (Evans, 2011). The next section further unpacks rapid technological change related disruption.

## Disruptive Technological Change

It is hard to find something that is not affected by the new speed of communication. Publishing is now mobile and instant, or as the way that Jarvis put it (2010), “twitter is a canary in the coal mine of news” (p. 105). Thanks to hyperconnectivity, individuals can now form intelligent communities, what Reingold labeled as *Smart Mobs* in title of his book in 2002. Furthermore, Shirky (2008) described the effects of an increasingly connected society on institutions as a contradiction of institutional resources. To Shirky, this is an “*institutional dilemma*--because an institution expends resources to manage resources, there is a gap between what those institutions are capable of in theory and in practice, and the larger the institution, the greater those costs” (p. 21).

With the rapid evolution of technology our world is constantly changing (Thomas and Seely Brown, 2011). According to Thomas and Seely Brown constant change, “is happening all around us, everywhere and it’s powerful” (p. 17). Based on a “new culture of learning,” the words of connected and collective are cultural phenomena that underlie individual experience and affect them in a myriad of ways (Thomas & Seely Brown, p. 18). Thomas and Seely Brown argued this cultural phenomena impacts the way we must think about school. Weinberger (2012), built on this sentiment with a new need for leadership to “learn how to build smart rooms-that is, how to build networks that make us smarter, especially since, when done badly, networks can make us stupider” (p. xiii). Thomas and Seely Brown described the need for leaders to leverage social and technical infrastructures in new ways. They believed that a *New Culture of Learning* is needed to: (1) think about the problem with education as a crisis in learning not teaching, (2) understanding success behind cultures of learning, (3) amplify the collective with playful peer to peer learning, and (4) optimize resources within large networks in ways that empower agency. To Thomas and Seely Brown these provide insight into the shifts in learning that leaders must embrace.

Advancements in digital communication technology have changed the way we live, work and play (Friedman, 2007), and widespread adoption of technology inside and outside formal educational environments is reshaping learning (Shirky, 2008). Jarvis (2010) articulated instant access to information and the shifts effecting individual expectations, “why should we wait on hold or in a line or until an office opens? Why should anyone give us complete information when completeness is a search away?” (p. 103). Even education, which embraces the virtues of deliberation of ideas and fermentation of knowledge, is dramatically affected by this new speed brought by hyperconnectivity (Jarvis). In 2012, a *New York Times* article titled *The Year of the MOOC* exemplified this when Ng shed light on Massive Open Online Courses (MOOCs) rising with 370,000 students in the first edX course and Coursea reaching 1.7 million (Papano, 2012).

According to Matthews and Crow (2010), “educational and informational sources, and the learning for both children and adults”(p. 66) is changed through the economic, political, cultural, and social dimensions of globalization made possible by technology. King, Swanson & Sweetland (2003) earlier referred the intersection of these dimensions with educational change as a crisis associated with the irrelevant traditional format of education related to global, economic, and social change. To King et al., the solution is “realignment or resign of the system in order to enable educators to prepare graduates to live and work successfully under new conditions” (p. 5). Robinson (2006) articulated the struggle to reform the industrial model of schooling when he said, “It’s education that’s meant to take us into this future that we can’t grasp” (00:56).

Wiles and Lundt (2004) similarly commented on the nature of schooling when they wrote, “Schools are increasingly unfit to educate young persons who possess extensive prior knowledge, have access to new knowledge, and demonstrate a natural curiosity for learning” (p. v). Hartle and Hobby (2003) pointed out the hierarchical organization of institutions

cannot “sustain motivation and engagement for each individual learner and employee-fundamental demands for the acquisition of the complex skills demanded by the knowledge economy” (p. 383).

Such criticisms of schooling are often paired with arguments for educational reform associated with technological change. According to Zhao (2012), there is general agreement among constituents across the world for high quality education for all children, “so they can be prepared for the future-the globalized world that is constantly and rapidly transformed by technology” (p. 15).

Zhao’s work spoke of stakeholder agreement for movement towards preparation for the future, Daggett (2008) articulated this progress as the constant struggle to keep up with accelerated societal, research, and technology changes. Since the 1980’s, much of educational reform has been centered on adding technology to the industrial model of schooling in an attempt to keep pace with rapid societal changes related to information technology (Collins & Halverson, 2009).

Historically societal cycles that characterize an era are mirrored in educational change (Ely, 1995). In 2002 Matthews pointed out that education is evolving and embracing digital information technology like never before. Since the Cold War began (1947) and the resulting National Defense Education Act (1958), money has been allocated for communication technology in schools in hopes of improved achievement (Collins & Halverson, 2009; Zucker, 2008). At the end of the Cold War, proliferation of personal computing technology, coupled with increased criticism of schooling, brought about the widespread mindset that computers could transform education. Such desires for transformation of curriculum and instruction, according to Brockmeier, Semon, and Hope (2005) were “the promise of computer technology” (p. 45). Technology spending in schools increased over the 1990’s into the new millennium (Anderson & Becker, 2001). Billions of dollars have been invested

in U.S. school for technology (ETIN, 2015), including the 2013 federal ConnectEd Obama administration project which increases broadband and aims to bring 99% of public schools online by 2018 (Obama, 2013).

According to a study from Futuresource Consulting (2014), global spending on educational technology amounted to \$13 billion in 2013 up 11% from 2012. In the late 1980's and early 1990's the principal's office was perhaps the only place in schools where a computer could be found (Ely, 1995), however, over the decade ratios decreased from 13.7 to 1 in 1992 to 6:1 in 1999 (Rother, 2003). Nagel (2010) pointed out the growing number of computer initiatives in place with 37% of school districts in the United States looking toward some type of one-to-one initiative. Today, the goal for many schools is for every person, including all students, to have access to a computing device (one-to-one); and for some, this has been a reality for almost a decade (Zucker & Light, 2009).

As access to computing devices continues to increase, associated with pure school owned one-to-one programs, or bring your own device (BYOD) and bring your own technology (BYOT) including smartphones, success of transformative technology integration in schooling largely still centers on teachers. Sauer and McLeod (2012) pointed out that, "as one-to-one programs move from the experimental stage and become more ingrained in regular practice, the research may begin to reveal additional benefits and concerns" (p. 6). Later, McLeod (2015) articulated, "Because digital devices and online environments can be simultaneously be transformatively empowering and maddeningly disruptive, the work of integrating digital learning tools into schools is usually difficult and complex" ("The Challenges of Digital Leadership," para. 1). Christensen, Horn, and Johnson (2008) stressed that schools are struggling to adjust to this new speed, and they need to shift to "a disruptive, rather than cramming mode" when combining technology and learning (p. 86). Webber (2003) emphasized the complexity when he wrote, "Despite the ubiquitous appearance of

technology in societies around the world, we continue to grapple with how we might best make use of information and communication technology (ICT) in schools” (p. 119).

The work of Levin and Schrum (2009) affirmed that ubiquitous technology added to schools alone is not enough to promote learning, and if done poorly is a recipe for distraction. The Los Angeles unified 1.8 billion dollar iPad rollout catastrophe is an extreme example (Lopez, 2013). Hawkrige (1990) presented four rationales for computing in education:

- The social rationale that stakeholders want to be assured that students are aware of how a computer works;
- The vocational rationale of teaching career foundations such as how to operate or program a computer;
- The pedagogic rationale associated with advantages for teaching and learning over non computer methods;
- The catalytic rationale related to computers as mechanism to facilitate change.

Ely (1995) advocated for schools to be more concerned with pedagogic and catalytic rationales.

Much of the tension between embracing new forms of learning, for schools is not resolved by adopting ubiquitous technology alone (Levin & Schrum, 2014). When viewing technology as a symbol of progress, Ely (1995) argued, reasons for adopting new technology are often overlooked. He further articulated, “We have been swept up by the tide of technology without fully understanding what purpose it serves and the ultimate consequences of our adoption and use” (p. 4).

Papert (1993) advocated the use of computers in schools as catalyst for creativity and innovation when he wrote, “One might say the computer is being used to program the child. In my vision, the child programs the computer” (p. 5). However, Turkle (2012) argued a



shift away from the goal of computer education aimed at teaching students logical processes and making computation transparent in the mid-1980's has taken place. To Turkle, educators today, "think of computer literacy as the ability to use the computer as an information appliance for such purposes as word processing," (p. 11) and the goals of understanding computation, and the use of computers in education are still in question. As we experience more and more increasingly pervasive "always on" (Turkle, 2011) technological changes both inside and outside of schooling, Ely (1995), Kelly (2010), Rushkoff (2011 & 2013), and Turkle (2005, 2008 & 2011) stress more explanation surrounding the use of computers in education is necessary.

In a rush to keep up, schools have been adding technologies to both the managerial and instructional sides of schooling for over two decades (Schrum & Levin, 2009). The technology itself which is thought to save time and make communication clearer has the extreme potential to do the exact opposite. Increased connectivity is a strong external force. Understanding external forces that influence school environments is of extreme importance to the school administration (Hoy & Miskel, 2008), and this is a complex task keeping in mind what Kelly (2010) described as the *technium*. Studies have pointed to technology integration as having a positive impact on student learning (Bebell & Kay, 2010; Bebell & O'Dwyer, 2010); however, these studies are balanced with findings of earlier research showcasing no aggregate effect on the environment or learning (Zhao & Frank, 2003). A body of research is evolving that identifies ways technology can transform learning environments (Bebell & Kay; Bebell & O'Dwyer; Weston & Bain, 2010; Zucker & Light, 2009).

According to aestetix (2014), "technology does not replace humanity, it magnetizes it" ("NymRights," 41:20). Today it is commonplace for teachers to engage in technology related professional development which showcases the potential for transformatively empowering them to shape learning in way never possible before. However, teachers are

forced to cram technology into the industrial era structures and systems of closed classrooms, tight bell schedules, and standardized testing directives. Rushkoff (2013) cautioned against the strong gravitational pull toward applying digital aged technology to an industrial model instead of embracing what Thomas and Seely Brown (2011) coined the “new culture of learning.” Much of technology today is being applied in schools that are still strongly entrenched in the industrial model. Rushkoff, pointed out the irony that by adding technology to such industrial context distracts away from envisioning and following through on a plan to shift away from models of the past. According to Rushkoff, “Our ability to create a plan-much less follow through on it-is undermined by our need to be able to improvise our way through any number of external impacts that stand to derail us at any moment” (p. 4). Applying digital aged technology to the industrial model of schooling is commonplace and a misguided means of doing old things in new ways, and creates the context for what Rushkoff devised “present shock.”

Present shock is a real and present threat, given an additive approach to technology in schools, which individuals in education are now facing. Educators, especially educational leaders, must avoid such a state of present shock to help institutions and ultimately society successfully navigate our increasingly digitized world (Scheninger, 2014). The next section explains many of the aspects described above as they relate to education.

**Making sense of technological change in education.** Educators are seen by themselves and society to have a moral obligation as model citizens (Ozomon & Craver, 2008). Unlike other professions, educators do their works as Palmer (2007) put it, at the, “dangerous intersection of personal and public life” (p. 18). According to Turkle (2011), hyperconnected “citizenship is a culture of simulations and requires that you know how to rewrite the rules. You need tools to measure, criticize, and judge every simulation” (p. 13). Individuals today come together to interact and create digitally like never before. New

opportunities for employment, education, and social interaction have been forged within a digital society, and such advantages require responsibilities for citizens to act a certain way, shaped by laws and consequences (Ribble & Bailey, 2007). According to Ribble and Bailey (2007), although a multitude of people do work, play, and learn through digital technology, many individuals still don't know how to be responsible citizens in this digital society" (p. 2).

Today most individuals merely consume or navigate simulations of other people's creations, and are trapped by unseen limitations within computational systems (Turkle, 2011). Yet to Ribble and Bailey (2007), "educators should look at technology not just as a collection of toys or gadgets, but as tools that allow individuals to communicate, and ultimately create society" (p. 12). For the discernment in advance needed to make good connected choices, school leaders must understand their relationship with technology. The postmodern era is a critical transition period marked by rapid change; and according to Ozmon and Craver (2008), "it is easy for people either to embrace more and more change with little thought of eventual consequences or to resist change and keep old values despite the consequences" (p. 1).

Lewin's work in 1947, described holistic focuses that effect change, and in some cases, cause changes to be short lived. He described the need to include a desired period of permanency after the change is made in order to determine if the change is successful. To Lewin, moving beyond a point of resistance to change involves individuals understanding the change, something individuals egos naturally prevent. Yet to Lewin being able to refreeze at a higher level to Lewin provides access to lasting change. According to Lewin (1947), "A successful change includes therefore three aspects unfreezing (if necessary) the present level L1, moving to a new level L2, and freezing group life on the new level" (p. 35). Rushkoff (2013) pointed out, "It seems that educators, like everyone else, are caught up in their own humanity" (p. 3) as impacting change within education in the postmodern era.

Snider's work (1972) articulated this struggle when he wrote, "technology often produces confusion over human means and human ends," (p. 4) and to Snider, "technology sometimes raises new moral issues related to long-held goals that can now be achieved with unimagined effectiveness" (p. 4). There is little doubt that the evolution of technological change has impacted leadership and presented complex and difficult waters these individuals and the institutions they lead must navigate, yet leader development associated with technology is often overlooked. Brockmeier et al. (2005) stressed, the visionary role of a principal is related to helping teachers gain expertise toward applying computer technology to teaching, learning, managing, and administrative tasks. "In the visionary role, principals establish a context for technology in the school and understand how technology can be used to restructure learning environments and empower teachers and students to be technologically astute" (p. 46). Unfortunately, with "the limited amount of research on principals' relationships with computer technology" (p. 46), many principals are ill prepared or supported to fulfill these roles. The next section presents specific themes from literature related to the complexities individuals, specifically leaders, face related to technological change.

### **Paradoxical Complexity of Technological Change**

Most individuals do not conceptualize just how interwoven technological systems and ourselves have become (Case, 2010; Feenberg, 2010; Rushkoff, 2013; Turkle, 2011). Much of what we know about technology is counter-intuitive in nature (Feenberg, 2010). Feenberg's use of paradoxes highlighted, "most of our common sense ideas about technology are wrong," as we conceptualize "things as separate from each other and from us" (p. 1). Ambiguity, complexity, and paradoxes are plentiful in both leadership and technology research (Ana Paula Borges, 2013; Farson, 1996; Farson & Keys, 2002; Mazmanian et al., 2013). Technology brings people closer together but, at the same time, can lead to feelings of

isolation (Boorstin, 1978; Turkle, 2011). It can make one feel smart and productive, and at the same time dumbfounded and paralyzed (Levitin, 2014; Turkle, 2015; Winner, 1994).

Boswell and Olson-Buchanan (2007) found mobile technology makes it possible to stay connected to work while at home. A study by Cousins and Varshney (2009) highlighted the positive aspect of mobile technology in the work place when they wrote, “activities infiltrate the home with ease and spontaneity and employees can carry out family activities at work effortlessly. For the employee, this has led to the always-connected lifestyle where organizational and family based computing resources are perpetually accessible” (p. 117). However, their findings also pointed out negative aspects stemming from the ability to access work from anywhere. According to Cousins and Varshney, “One implication of working anytime, anywhere is working all the time, everywhere reducing the personal time people require for rest and renewal” (p. 117).

The work of Mazmanian, Orlikowski, & Yates (2005) found specific technologies reduce the perception of overload pertaining to email. This same study also found that those users of such technology also felt compelled to respond to work related email at home. The study of Intel employees done by Govindaraju and Sward (2005) pointed to mobile technologies ability to allow users to do work in small periods of time for better work-life balance. The work of Middleton and Cukier (2006) found mobile email usage to be both functional and dysfunctional based on organizational culture. Later Middleton (2007) examined the BlackBerry as an efficiency tool finding users highly regarded their BlackBerries to “help them control and manage their work environments” (p. 175), yet such anytime anywhere closeness also contribute to “negative aspects of organizational cultures that encourage overwork” (p. 176).

Middleton (2007) suggested advancement in mobile technologies in the work place could compromise work-life balance due to adopting work intensification behaviors

including ineffective multitasking. Chesley's (2014) work highlighted the intensification behaviors Middleton pointed out might possibly becoming the standard expectation as connectivity enables individuals to be connected to work at home. Middleton recommended that a future line of inquiry on this topic would be to investigate how individuals learn to cope with the, "increasingly negative impacts of mobile technology in the workplace" (p. 175). Levitin (2014) suggested rethinking the ways in which we use our time in today's world of information overload. Concepts such as multitasking, lack of partitioning, and mismanaging our time leading to counterproductively are all threats to living a balanced life (Levitin). If intentionality of mind is missing, individuals are vulnerable to all the negative aspects of our increasingly digitized world (Hammerness et al., 2011). Research related to smartphone use at bedtime highlights individual vulnerabilities to one negative aspect. When studying the effects of smartphone use on upper level managers Lanaj, Johnson, and Barnes (2014) found light emitted from smartphones disrupts sleep and the release of melatonin making it difficult to fall into deep sleep, decreased sleep time, and lowered productivity the following day.

Smith's (2012) work, *The Best (and Worst) of Mobile Connectivity*, outlined the individual's strain between the convenience constant connectivity offers, as well as the downside and annoyances of constant interruptions. According to Smith, we are extremely attached to our phones and "can't imagine living without" them" (p. 2). The work of Rosen, Whaling, Rab, Carrier, and Cheever (2013) affirmed the tension hyperconnectivity offers. Their results showed both positive and negative aspects of using technology including individual attraction to multitasking alongside social media and highlighted that labelling multitasking in educational settings as extremely harmful to comprehension is misguided (Rosen et al., 2013). However, other studies have found technologically induced distractions are associated with decreased performance and increased errors to some degree in business

settings (Monk, Trafton, & Boehm-Davis, 2008), and are linked to increased stress as well as anxiety (Barley, Meyerson & Corodal, 2011; Mark, Gudith, & Klocke, 2008). The work of Ratwani, Andrews, Sousk, and Trafton (2008) showed that visually switching away from a primary task increases time required to complete the task as well as increasing errors.

Previous works have argued that by removing or reducing the ability to connect to email the pace of communication is slowed and productivity is boosted De Vita (2015), and Mark, Volda and Cardello (2012),

Jarvenpaa and Lang (2005), and Mazmanian et al. (2005 & 2013) identified additional paradoxes associated with mobile technology such as: continuity vs. asynchronicity, engagement vs. disengagement, and autonomy vs. addiction. The work of Hines et al. (2008), when studying high school principal email use, found perceptions varied between enhancement of communication, sense of community, degrading interactions, and effective communication. Ana Paula Borges (2013) noted two highly ambiguous paradoxes (continuity vs. asynchronicity, and autonomy vs. addiction) when studying executives' smartphone use. Her work also highlights the concept of coping strategies being closely related to such ambiguity surrounding technological paradoxes related to ubiquitous computing technology (Ana Paula Borges). This echoed the findings of De Vita (2015), Derks and Bakker (2014), Mark et al., (2012), Middleton (2007), and Stanko and Bakerman (2015) that suggested over time, the wide spread mobile technology adoption within organizations may result in detrimental outcomes if individuals do not learn coping strategies. Much of what these previous works pointed out has not been explored within the educational leadership setting.

Examples such as the Los Angeles unified walk out, and the lift on the New York City schools cell phone ban, leaving decisions about what to do with student's cell phones up to individual building principals (Taylor, 2015), showcases that schools as organizations are

facing the complexities of hyperconnectivity regardless of their readiness. Technological and societal changes present paradoxes that confront us with a myriad of choice, and often times we are biologically seduced in ways our brains are cognitively unable to process the way we expect them to (Goleman & Senge, 2014). The next section shares literature showcasing how the use of technology can impact individual wellbeing.

**Individual wellbeing.** The facets of anytime-anywhere ubiquitous connectivity, changes patterns of interactions and communication leading to blurred boundaries between work and home, and potentially chronic stress, anxiety, degradation of relationships and burnout (Hines et al., 2008). Coupling this with ever increasing demands for a leader's attention, having to frequently switch gears and give short bursts of concentration, means leaders are at risk to spiral into a multitasking mental fog, unable to think through, let alone lead, such change processes (Goleman & Senge, 2014). Often the single most important factor in success or failure of schools is leadership (Bass, 1990), yet, historically leaders have been one of the least supported facets of technology related change in schooling (McLeod, 2008).

Leithwood, Louis, Anderson, and Wahlstrom (2004) found leadership second only to classroom instruction of factors influencing student achievement. Their work focused on top causes of principal stress in order to prevent principal burnout, turnover, and improved productivity. When investigating the relationship between job demands and individuals differences regarding principal stress perception using a modified version of the Administrative Stress Index (Gmelch & Swent, 1984), Morgan (2014) found, all principals self-reported excessive or great amounts of stress. This is in line with the findings of Queen and Queen (2005) that principals are the group of those in education most susceptible to high levels of burnout and stress. Grissom, Loeb, and Mitani (2015) found strong evidence when



studying principal time management skills in the fourth largest school district in the U.S, that principals with strong time management skills have much lower stress.

Workplace stress affects organizational performance beyond individual well-being (Quast, 2011). Positive effects do come from stress, but frequent stresses can affect emotional and physical health, productivity, and relationships (Yang, 2010). Middleton (2009) recognized that normal every day stress turns problematic when it becomes overwhelming or constant, and the body shows early warning signs and symptoms.

Each individual reacts to job related stress differently from potential triggers, and it is important for workplaces to manage it (Quast, 2011). Initial studies on the causes of principal stress are now adding a dimension to the related work on how they cope with stress (Morgan, 2014). Morgan identified signs/symptoms such as frequent headaches, sleep problems, emotions of feeling out of control, struggles to switch off thoughts, inability to concentrate, and many more indicators related to principal's stress.

Coulter (2010) found a negative correlation between perceived stress and leadership practices when studying K-12 public school building administrators. Using the Administrative Stress Index (ASI), Devon (2010) examined principal's sources of stress showing four top stressors: (a) too heavy of a work load; (b) failing to complete paperwork or other reports; (c) too much time consumed by meetings and (d) daily interruptions. In addition, Toner (2013) noted that principals are overwhelmed by constant change and increased job responsibility, leaving them overloaded with stress.

Hines et al. (2008) found indications that electronic communication was affecting the wellbeing of principals when studying the impact of electronic communication on school principals. Their results found that all participants (10) now communicated differently, and believed that they were at risk of being tied to their office computer. Hines et al.'s work identified twelve themes related to electronic communication:

- The volume of communication/information being sent and received
- The increase in the amount of time being spent at work stations [computers]
- Time spent at work
- The ease of accessibility
- Training for aspiring principals
- Training for staff
- Staff interaction
- Style and syntax
- Immediate and impulsive properties
- The absence of social pressure
- Rate of speed of communication
- Complications related to open records, legal issues, and student privacy (Hines et al., p. 282)

The summation of these twelve themes create the context of for principal overload as the volume of communication and information becomes untenable. Hines et al. found:

every single principal interviewed emphasized the tremendous amount of information that is shared via electronic communication and how that has increased the demands of the daily job. While principals are privy to information that might have been much more difficult to obtain in previous years, they are also overloaded with information that is often not necessary to their actual job performance. (p. 282)

Their further findings indicated that stress and anxiety come from the potential to send and receive email 24 hours a day, and the growing volume and rate of communication. Their work also highlighted a potentially intensified version of their findings in schools serving a

higher socio-economic community. Further recommendations for research emerging from their work included exploration of questions related to principal stress and anxiety such as:

Does electronic communication add to the stress and anxiety of principals? Is the already difficult job made more so because principals now have more things to worry about? Has the pace of work accelerated as a result of electronic communication? Are the long hours that principals already put in growing even longer? Are the skills required to be a successful principal changing? (Hines et al., p. 289)

In addition, their recommendations pointed to a need for further inquiry into aspects of individual use of technology for electronic communication within learning communities.

Individual use of technology, specifically connected devices, as a part of professional practice and productivity is invasive and complex (boyd, 2014; Kelly, 2010; Shirky, 2008; Turkle, 2011). Often we are unaware of how we are using technology in ways that make all of our physical and emotional systems sick. Distracted and overloaded, we suffer from low brain energy, overdoses of negativity, chronic multitasking, and chronic distraction (Hammerness et al., 2011). According to Peeke (2013), we are “filling the survival void with false fixes” (“Hacked, Hooked, & Hijacked,” 00:30). These false fixes lead to addictive behavior, and hijack “the ability of the brain to be able to muster up all of the wonderful skills you see in the prefrontal cortex, which are organizing, strategizing, staying vigilant, being mindful, reining in impulsivity and irritability” (Peeke, 2013, 07:30).

Each time we get pinged (i.e. the buzz from an incoming text message or ding of an incoming email) the brain releases cortisone the stress hormone needed to go into survival mode (Rushkoff, 2013). Today, in some parts of the world, one has to look long and hard to find a place where they can escape constant interruption. Resorts now advertise no connectivity as a selling point, yet guests complain when they “need” to send an important email. Schools tout their new shiny technology as the new way of learning, but make

students sit in rows with nothing more than a pencil and paper to take tests, and do not make the significant pedagogical changes needed to work with technology in ways that transform learning (Fullan, 2012)..

Almost half a century later, we are grappling with what Toffler (1970) cautioned, “When the individual is plunged into a fast and irregularly changing situation, or a novelty overloaded context ... his predictive accuracy plummets. He can no longer make the reasonably correct assessments on which rational behaviour is dependent” (p. 301).

As Shirky articulated in his 2009 Non-profit Technology Conference (NTC) keynote presentation, “We’re not good at thinking fast. We are good at feeling fast” (April, 28, 2009). Hemp (2006) stated the anguish felt with increased connectivity when he stated:

The flood of information that swamps me daily seems to produce more pain than gain. And it’s not just the wave of e-mail messages and RSS feeds that causes me grief. It’s also the vast ocean of information I feel compelled to go out and explore in order to keep up in my job. (p. 2)

Hemp’s original “vast ocean” some nine years later seems like a small puddle compared to the reality hybrid cloud environments are making possible by enabling billions of people and things to connect. Stone (2008) devised the term “continuous partial attention” when describing the mental state of today’s knowledge workers implying that “e-mail apnea” or suspension of regular breathing are associated with tackling ones email inbox full of messages. This is part of our fight or flight reaction system coming from our brain (Hammerness et al., 2011). This resonates with the work of Palmer (2007), when he articulated, "The self is not infinitely elastic- it has potentials and it has limits" (p. 16).

**Technology and self: A thinning line.** Within “The Future of the Internet 2012” a PEW Research Center’s Internet and American Life project report, futurist Barry Chudakov from the University of Toronto’s McLuhan Program in Culture and Technology articulated

the thin line between technology and self. He predicted that by 2020, “Technology will be so seamlessly integrated into our lives that it will effectively disappear” (Anderson & Rainie, 2012 p. 5). Turkle described this phenomenon in her book, *The Second Self, Computers and the Human Spirit* (2005):

Technology catalyzes changes not only in what we do, but in how we think. It changes people’s awareness of themselves, of one another, of their relationship with the world. The new machine that stands behind the flashing digital signal, unlike the clock, the telescope, or the train, is a machine that “thinks.” It challenges our notions not only of time and distance, but of mind. (pp. 18-19)

For most individuals today, information computation is far from transparent. Rule based transparency according to Turkle (2005) limits individual cognition of computing, and most computing interfaces today are gesture based, liberating one from the exercise of thinking about the machine at all. Designers at Apple in the mid 80’s strived for “Macintosh meaning,” never having to go deeper than clicking attractive icons and dialogue boxes. This quickly shifted individual interaction with computers away from transparency, and according to Turkle (2005), created the context in which “people had moved away from reductive and mechanistic view of how to relate to a computer and were learning to take the machine at (inter)face value” (p. 9).

Macpherson (2000) warned of the force of technology as far from neutral as a force that at the core changes how individuals think and interact. To Goleman and Senge (2014), our attention to each other is under attack due to digital devices. Technology is not neutral, it pulls us together and moves us apart, according Turkle (2005), “technology doesn’t just do things *for* us, it does things *to* us” (p. 3). Lack of separation of the cognitive from the affective, the mind from the body, the work of the head from the work of the hand (Pratt,

1987), leaves us vulnerable (Turkle, 2011). Kelly (2010) described this new way of existing with technology as a powerful force:

The technium is now a great force in our world as nature, and our response to the technium should be similar to our response to nature. We can't demand technology obey us any more than we can demand that life obey us. Sometimes we should surrender to its lead and bask in its abundance, and sometimes we should try to bend its natural course to meet our own. (p. 17)

Ubiquitous computing technologies collapse the concept of time and space. For many, this also means blurred boundaries between work and home.

According to Levy (2006), increasingly, there is evidence that working and living in today's technology-rich, speed-obsessed, information-saturated world is taking its toll on us" ("More, Faster, Better," para. 5). He also pointed out that, "Unlike industrial production, however, there are no natural limits to information production; but there are natural, neurological limits to our attentional capacity" ("Environmentalism for the Information Age," "More, Faster, Better," para. 3). As futurist Prensky wrote (2013), "Technology is now a part of mental activity. And we need to use it wisely" (p. 13). We have only limited brain cognition under particular conditions (Willingham, 2009). Case (2010) believed the evolution of digital tools is now at a place of tool as extension of mental self:

for thousands and thousands of years, everything has been a physical modification of self. It has helped us to extend our physical selves, go faster, hit things harder, and there's been a limit on that. But now what we're looking at is not an extension of the physical self, but an extension of the mental self, and because of that, we're able to travel faster, communicate differently. And the other thing that happens is that we're all carrying around little Mary Poppins technology. We can put anything we want into it, and it doesn't get heavier, and then we can take anything out. What does the

inside of your computer actually look like? Well, if you print it out, it looks like a thousand pounds of material that you're carrying around all the time. And if you actually lose that information, it means that you suddenly have this loss in your mind, that you suddenly feel like something's missing, except you aren't able to see it, so it feels like a very strange emotion. (01:24)

This ability to mentally transport oneself has psychological effects, and compresses space and time (Case). Case described this when she said:

you have a different type of time on every single device that you use. Every single browser tab gives you a different type of time. And because of that, you start to dig around for your external memories -- where did you leave them? So now we're all these paleontologists that are digging for things that we've lost on our external brains that we're carrying around in our pockets. And that incites a sort of panic architecture -- "Oh no, where's this thing?" We're all "I Love Lucy" on a great assembly line of information, and we can't keep up. (04:43)

This time space compression and mental extension of self into the digital realm to Case threatens mental reflection needed to navigate our increasingly digitized world.

According to Rushkoff (2013), most of us are living in a state of *Present Shock*. Such a state can be explained as “the human response to living in a world where everything happens now. It’s a real time always on existence without any sense of beginning, middle, or end, just now” (Darkrye, 2014, 00:56-01:07). According to Rushkoff (2013):

Computers and the net may be running in real time, but its torrents of pings seems to be coming at us from all sides simultaneously. Which flashing screen we choose to answer often means less about whom or what we want to engage with than who or what we want to be, ourselves, in the moment. We’re in the game, all right, but playing on many different levels at once. Or at least we’re trying to. (p. 67)

This dissonance between our digital selves and our physical analog bodies creates the context for the anxious state of present shock (Rushkoff, 2013). To Rushkoff, present shock leaves us out of touch with the natural world and each other as we chase “the false now of twitter feeds and email inboxes” (Darkrye, 2014, 01:17-01:22). It is the conflict between Chronos (ancient Greek for time on the clock, the industrial mark of efficiency), and Kairos (human timing, readiness as we move through the temporal landscape). According to Rushkoff (2013):

As a result, our culture becomes an entropic, static hum of everybody trying to capture the slipping moment. Narrative and goals are surrendered to a skewed notion of the real and the immediate; the Tweet; the status update. What we are doing at any given moment becomes all-important-which is behavioristically doomed. For this desperate approach to time is at once flawed and narcissistic. Which “now” is important; the now I just lived or the now I’m in right now?” (p. 6)

To Rushkoff often-such a scenario appears when taking 21<sup>st</sup> century technology and applying it to the 13/14<sup>th</sup> century industrial operating systems. Rushkoff stressed this scenario is a false illusion of living in the moment and such a state, “has not actually brought us into greater awareness of what is going on around us” (p. 4). What Rushkoff pointed out quickly surfaces when looking at the literature related to digitally mediated communication. Such communication that now is anytime, anywhere and constant, and it presents an entirely new means for relating to one another.

**Digitally mediated communication.** Mayer-Guell (2000) highlighted that communication norms must be established with the principal playing a major role in modeling appropriate mediums and use of electronic communication. Stanko and Beckman (2015) pointed out leaders must use multiple strategies to help others mindfully use



technology to communication. According to Hoerr (2011a), personal accounts highlight the complexity that comes with digitally mediated communication. One principal wrote:

That complaining parent was upset when he hit *send*. His e-stick-in-the-eye was designed to provoke a reaction, and it did! I read his e-mail, pounded a response (it does feel good to make those keystrokes more intense), and hit send: Back at you! Alas, that quick response doesn't lead to a solution, and the e-mail record allows everyone to revisit each comment and get upset once more. Or perhaps e-mails are forwarded, and then others join the upset parade. (p. 88)

Time and place displacement, as well as lack of verbal cues are real facets of digitally mediated communication, which can get personal, fast. On the other hand, communication offers one time to evaluate and carefully craft a response. Butts et al., (2015), and Harris, Harris, Carlson, & Carlson, (2015) highlighted electronic work related communication at home causes increased conflict and lack of work-life balance. Those individuals that can remember their first few experiences writing e-mails or posting online usually can remember the large amount of thought and care that went into its content (Rushkoff, 2013). Sherblom's work (2010) spoke to communication mediated through computing devices within groups as "more than a conversation," he called them "personal, authentic, socially meaningful activity, embodied within a community" (p. 502).

A post on social media can elicit feelings of connectedness, at the same time as loneliness as one consumes such media separate from others. Turkle (2011) described this as, "I share therefore I am. I have a feeling...I want to have a feeling.... I need to send a text, style of relating as you are forming an emotion, you engage in practice where you share it" ("A Conversation with Sherry Turkle," 10:05). Such digital communication mediates interactions in ways individuals often do not comprehend.

Concepts of privacy and identity run parallel to those of openness and connectedness, and perceived privacy risks are overshadowed by social rewards of sharing personal information online (boyd & Marwick, 2011). Ito et al.'s (2009), *Hanging Out, Messing Around and Geeking Out- Living and Learning with New Media*, and boyd's (2008) ethnographic work, *Taken out of context: American Teen sociality in networked publics* highlighted the concept's persistence, searchability, reliability, and scalability as unique facets of connected communication faced by teens. These same facets are equally, if not more, inescapable for leaders. According to Kanter (2010), "Smart leaders know that they are always representing their institutions" ("Gordon Brown, Ursula Burns: Leaders are Always On," para. 7). Always on and always representing, in the age of anywhere, anytime communication in our increasingly digitized world magnetizes the work of leaders.

**Mindfully navigating increasing digitization.** The facets of overload, balance, communication, comprehension, productivity and much, much more associated with hyperconnectivity are certainly complex. Eriksen (2001) pointed out such digital "acceleration affects both the production of knowledge and the mode of thought in contemporary culture" (p. 148). According to Levy (2006), "lack of time to think deeply, to the extent that it pervades our educational system, our media, and our political leaders, affects the entire culture" ("Time to Think," para. 2). Reflection on the causes and conditions in which we exist are needed to achieve a more thoughtful and balanced state (Levy, 2006). Case (2010) stressed the need for down time away from mental extension with technology to figure out how to present oneself digitally. The work of cognitive psychologist and scientists presents similar arguments from the perspective of needing to better understand how the brain works so our cognitive vulnerabilities in an increasingly digitized world can be minimized (Goleman, 2013; Levintin, 2014). Ruskoff (2011) explained the need for to understand our cognitive vulnerabilities when he wrote:

Faced with a networked future that seems to favor the distracted over the focused, the automatic over the considered, and the contrary over the compassionate, it's time to press the pause button and ask what all this means to the future of our work, our lives, and even our species. And while the question may be similar in shape to those facing human passing through other great technological shifts, they are even more significant this time around- and they can be more directly and purposefully addressed. (pp. 16-17)

If individuals do not pause to understand the ways technology is shaping our world and ourselves, they may no longer be able to successfully navigate and create the world around them. We need to be aware of our relationship with technology (Rosen, Cheever & Carrier, 2012, 2015; Turkle, 2011), and knowledgeable about the technology that now underpins the way we consume and create in the digital age (Rushkoff). To Goleman and Senge (2014), this included how technology affects our attention, the same attention that is under attack effects our capacity to learn. According to Levitin (2014), if used appropriately, technological tools offer means to think more clearly and work more productively. Levitin articulated this when he wrote:

More than ever, effective external systems are available for organizing, categorizing, and keeping track of things. In the past, the only option was a string of human assistants. But no, in the age of automation, there are other options. (p. 12)

All of what Kelly (2010), Levitin (2014), and Rushkoff (2011, 2013) suggested as means to navigate hyperconnected environments must be learned. This learning starts with better understanding our hyperconnected experiences. As we navigate the increasing complexities of hyperconnected life, our ability to “learning, unlearn, and relearn” (Toffler, 1970, p. 211) must be in high gear. At the apex of such learning is what Rushkoff (2011) articulated as boundaries of cognition. He explained this when he wrote, “To most of us, though, that

“click: still feels the same, even though the results are very different. We can’t quite feel the biases shifting as we move from technology to technology, or task to task” (pp. 26-27).

Understanding this bias shifting between tasks starts with a more human response.

To Rushkoff (2011) to catch up to networked machines, humanity must rethink and reorganize “the way we operate our work, our schools, our lives, and ultimately our nervous systems in this new environment” (p. 17). Works of Covey (1998), Henderson (2007), Ozomon and Craver (2008) and, Palmer (2007), articulated the need for renewal through introspection to mindfully approach change. Others similarly pointed to navigating complex outside change by searching within (Bennis, 2001; Kouzes and Posner, 2006; Meng Tan, 2012; Sergiovanni, 2001).

Reitz and Chaskalson (2016) showed mindfulness when practiced regularly has positive effects upon leaders. They argue that increased time to pause enables leaders to navigate their work with less stress and more empathy. Reitz and Chaskalson also pointed out that leaders find it difficult to make time for frequent and consistent mindfulness practice given their demanding schedules, and that much more research is needed in this area.

The new hyperconnected “always on” reality we face leaves us vulnerable as we find less and less time and space for reflection. In Bennis’s (2001) essay, *The Future Has No Shelf Life*, he stated that we occupy a world extremely different than we ever have before it is “qualitatively different, more charismatic, to coin a word, more consequential, affecting more of our life-space than other tectonic changes we’ve experienced” (p. 4). Keeping in mind leaders are now faced with little time for reflection articulated above, the next section presents changes to the role of school leadership.

### **Changing Roles of School Leadership**

Disruptive technological change has affected leadership. The role of school leader is evolving as the way that students are prepared changes, yet the core outcome, effective student achievement, has not (Larson, Miller, & Ribble, 2010). Hoyle, English and Steffy (2005) stressed this when they wrote, “the job of all educational leaders, whether their primary responsibility is a single school or school district, is to create highly reliable organizations which all children can be successful” (p. 53). Past research has stressed the pivotal role of the building principal regarding high quality learning, systematic change, and continuous school improvement (Fullan, 2001; Lambert, 2003 & Marzano, Walters & McNulty, 2005); and researchers are starting to demonstrate a link between principal leadership and student learning associated to technology (Anderson, 2011; Anderson & Dexter, 2000, 2005, Schrum & Levin, 2012, 2015 & 2016). According to Schrum and Levin (2016), “educational leaders must simultaneously expand their knowledge and understanding of the many aspects involved in leveraging technology effectively and acting at the same time” (p. 22).

Hallinger (2007) found effective instructional leadership from shared decision-making between the principal and teachers. This research as well as the work of Dexter (2011) highlighted effective collaboration around clear student learning goals, a climate of high expectations, monitoring student learning outcomes, and faculty development. Condon and Clifford (2009) pointed out that to support excellence today; principals must ensure accountability for student learning and access to high-quality instruction highlighting new standards and areas of focus. Principals that embrace a collaborative leadership style backed by a clear-coherent leadership strategy are strongly associated with productive schooling (Sebring & Bryk, 2000). Wiseman and McKeown articulated this in their 2010 book *Multipliers*:

It isn't how much you know that matters. What matters is how much access you have to what other people know. It isn't just how intelligent your team members are; it is how much of that intelligence you can draw out and put to use. (p. 10)

With the sentiment of Wiseman and McKeown in mind, the following section first discusses the theories of distributed and transformational leadership. Second, a general overview of literature describing changes in both leader expectations and behavior are presented including the increased focus on professional learning communities and technology.

**Distributed and transformational leadership.** Marzano's (2003) work on school-level factors relating to student achievement stressed the importance of leadership in effectively organizing intelligent teams. In an era where technological change is disrupting just about everything, educational leaders are grappling with organizational issues that they have never had to deal with before. In 1992 Fullan emphasized the need to think through the change process associated with technology implementation as well as key facts such as innovation, commitment, professional development, and importantly principal leadership. Fullan (2004) later articulated the need for leadership "to set up the conditions for cultivating and sorting the wisdom of the system" (p. 6).

According to Senge et al. (2000), "If you want to improve a school system, look first to the way that people think and interact together" (p. 19). Due to their nature as social systems, schools are in a constant state of change (Waller, 1932). Leadership theory just like technology has evolved in complex, eluding, and taunting ways (Bennis & Nanus, 1985). Yet when approaching, the vulnerabilities brought about by increased technological change, educational leadership theories are a logical place where leaders should start to best inform everyday practice and guide reflective action. Educational leadership theory is a leader's toolkit for practice (Hoy & Miskel, 2008), especially in an era of rapid technological change.

According to Hoy and Miskel (2008), “Understanding the existing and budding environmental influences is of extreme importance to school administrators” (p. 258). Hecht (2012) pointed out how much connectivity as a result of technological change affects leadership:

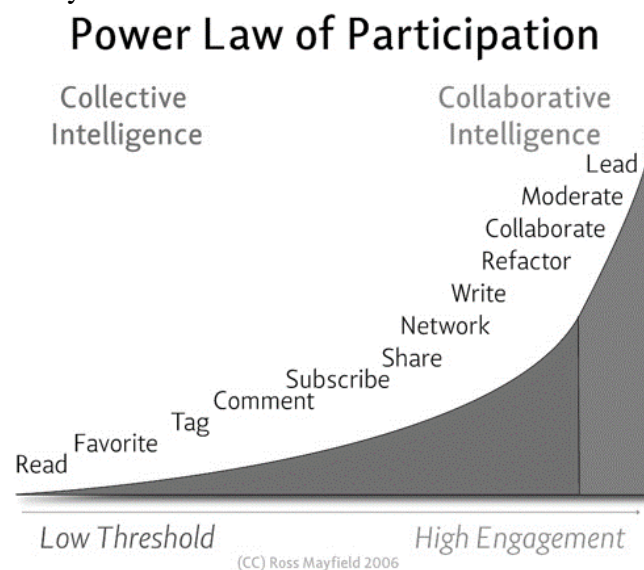
Leadership has become distributed and collaborative. The new reality is that leaders don't lead alone. We are all part of a much broader problem-solving network, with many high-performing organizations and individuals—public and private—working on different parts of the same problem or even the same part of the same problem. The most influential members of the collaborative are increasingly harnessing new technology to share ideas, get real-time feedback, and build knowledge for the field. Leaders are no longer just steering their own ship; they are helping a network solve problems with the best and most current thinking available. Collaboration is the new competition and the more valuable your contributions are, the greater your influence will be. (p.1)

Much of what Hecht articulated above is in line with proponents of distributed leadership. Haughey (2006) when researching how Canadian principals promote and model the use of technology within schools found that by using technology principals shift hierarchical leadership structures towards a more distributed leadership model. According to Branch (2011), “Effective principals nurture and sustain a culture of collaboration, trust, learning, and high expectations” (p. 2).

The distributed leadership models, according to Hoy and Miskel (2008), “embrace leadership by teams, groups, and organizational culture” (p. 438). Connective technology enables leaders to be in constant communication with others at all times. Such technology breaks down barriers of time and space and enables distributed leadership where multiple leaders are acting together (Spillane, 2005, 2006). Proponents stress that distributed

leadership is needed in complex organizations. Ogawa and Bossert (1995) noted that the organizational quality of leadership flows in networks that take various forms across schools. Gorton and Alston (2009) emphasized this unique facet within schools when they wrote, “Distributed leadership centers around a different model within the school where distinctions between followers tend to blur” (p. 16).

Tetenbaum and Laurence (2011) also stressed the importance of information and knowledge sharing as an essential component in the information age that brings about significant changes in organizational structures. Organizational conception of distributed leadership can occur if a certain level of efficiency is present (March, 2006). Social software, as software designed to connect individuals if used appropriately, can bring individuals together, however user engagement and threshold of participation is not a given (Mayfield, 2006). At the top end of the Power Law of Participation, which illustrates participation related to engagement and intelligence, is leadership (Figure 1). As Figure 1 shows, both level of engagement and digital literacy are needed to effectively lead environments supplemented or replaced by social software.



*Figure 1:* Power law of participation. (Source: Mayfield, 2006). \*CC-BY-NC 2.0 by Ross Mayfield. Reprinted with permission.



March (2006) identified the factors of competence, identification, and unobtrusive coordination as factors that advance efficiency. In a hyperconnected environment where much of the lines between work and home are blurred and most communication is mediated, an individual's understanding of their own relationship with technology is essential. Facets of relational trust linked strongly to principal leadership and competence are critical factors in high-level collaboration in distributed environments (Bryk & Schneider, 2003). These facets are dramatically altered in communities that embrace computer mediated communication (Sherblom, 2010).

Shirky (2008) described changes in leadership hierarchy that showcase distributed theory elements:

It's not that hierarchy is going to crumble, but many of the advantages of hierarchy are going to crumble, the advantages, of the habitual 20<sup>th</sup> century norms institution enjoyed, a relative monopoly on tight management of information and tight coordination, of action, are gone. (UsNowFilm, 2008, 00:05)

Shirky's previous points regarding information flow presents new elements and applications for educational leadership theories. Godin (2008) expressed the need for transformational leadership when he wrote, "The explosion in tribes, groups, covens, and circles of interest means that anyone who wants to make a difference can. Without leaders, there are no followers. You're a leader. We need you" (p. 9).

Leaders must recognize the way individuals interact changed as tight control over information flow is disrupted because of digital communication. Transformational leadership theory offers guidance for leaders as they shape how individuals connect. Burns' (1978) defined transformational leadership as: "Such leadership [transforming leadership] occurs when one or more persons engage with others in such a way that leaders and followers raise one another to higher levels of motivation and morality" (p. 20). Bass's (1985)

transformational leadership model expanded and refined the work done by Burns and House, as he further described followers and the transactional and transformational continuum.

Bennis and Nanus (1985) identified four leader strategies in transforming organizations: (a) have a clear vision, (b) create a shape for shared meaning, (c) create trust by transparently stating their position, and (d) finally emphasize strengths but know weaknesses. These leadership strategies outlined by Bennis and Nanus are now complexly interwoven with digitally mediated communication (McLeod, 2015). Later Leithwood (1992) articulated transformational leadership as grounded in participative decision-making, and is “based on a form of consensual facilitative power that is manifested through other people instead of over other people” (p. 9).

According to Daggett (2008), “While all educators must play key roles in changing schools, those in leadership positions bare an even greater burden. They must respond to change appropriately, and they must show others the way” (p. 61). To Hoy and Miskel (2008), “Transformational leaders challenge followers to think creativity, design new procedures and programs, and solve difficult problems; foster unlearning, and eliminate the fixation on old ways of doing things” (p. 447). This is similar to Lewin’s (1947) force field analysis work that highlighted the need for leaders to guide individuals through the change process by shaping forces to unfreeze, change, and refreeze in new sustainable ways. To pay attention to individualized needs appropriately, a transformational leader must use two-way communication and be an active listener (Hoy & Miskel). Transformational leadership, being more than technical and interpersonal and positioned closely to symbolic aspects, must be considered in the context of situational variables that facilitate and limit this approach (Yukl, 1999). Connected technology together with a leader’s relationship with such technology has the power to both facilitate and limit transformational and distributed

leadership approaches (Scheninger, 2014). As Shirky (2008) stressed, a leader can no longer lean on the hierarch and organizational advantage of access to information for power.

When addressing how organizational leadership has changed, Shirky (2008) recalled an example of how leaders no longer have sole possession of access to form networks and facilitate change. He recounted how 50,000 Latino high school students acted together as they left school while it was in session, blocked traffic, and moved towards city hall in protest of an anti-immigration law in California. To Shirky, this mass exit of school and organized protest all happened in ways that the LA unified school district administrators knew nothing about. It happened in less than forty-eight hours, through social media and text messaging. According to Shirky, “The individual power goes down to that one person, or that small group of people who can offer the plausible promise in a way that gets people not just to be aware that it’s possible but excited about it” (UsNowFilm, 2008, 03:31).

The student organizers in this example showcase what Kouzes and Pozner (1998) outlined as five fundamental leadership practices:

- Model the way
- Inspire a shared vision
- Challenge the process
- Enable others to act
- Encourage the heart (p. 2)

These students felt strongly that they could influence legislature and thus they strategized, communication, motivated and influenced collective action.

Godin (2008) articulated this new need for leadership:

There’s an explosion of new tools available to help lead the tribes we’re forming.

Facebook and Ning and Meetup and Twitter. Squidoo, Basecamp and Craigslist and

e-mail. There are literally thousands of ways to coordinate and connect groups of people that just didn't exist a generation ago.

All of it is worthless if you don't decide to lead. All of it goes to waste if your leadership is compromised, if you settle, if you don't commit.

Many tribes. Many tools. I'm writing to you about both. The market needs you (we need you) and the tools are there, just waiting. All that's missing is you, and your vision and your passion. (pp. 4-5)

Branch (2011) echoed Godin's sentiments when he wrote, "School leaders must pave the way for engaging students the 21st century way by providing technology rich environments, networked professional learning communities, and trained teachers to help facilitate the process" (p. 12).

On the morning of March 25<sup>th</sup>, 2006, students in the LA unified example above used tools school leaders were unaware of. Those exemplifying strong transformational and distributed leadership on this day where the original student organizers, showcasing the complexity hyperconnectivity brings to present school leaders. The above inspections of shifts in leadership are pragmatically seen through changing expectations and behaviors of school leaders explored in the next section.

**Evolving expectation and behaviors of school leadership.** Long before most school leaders had super computing power in their pockets in the form of cell phones, structured observation studies revealed similar characteristics of administrative jobs across countries and organizational setting such as exhaustive pace of work over long hours, large amounts of time communicating, changing tasks frequently, and fragmented discontinuous demands of their attention (Chung & Miskel, 1989; Hoy & Miskel, 2008).

Today because of hyperconnectivity, leaders are increasingly experiencing a paradoxically overloaded or oppressed version of much of the characteristics revealed by

Chung and Miskel (1989), and Hoy and Miskel (2008). With virtually no time for reflection and chronic work-life tensions, school leaders experience significant personal obstacles (Ackerman & Maslin-Ostrowski, 2002). Leadership, if not managed carefully, creates context for asynchronous overload leaving little time for face to face communication, reflection in action, self-renewal, and uninterrupted deep thinking time to effectively lead today's learning environments. Yet, leaders are pivotal to providing guidance and direction for school improvement by helping others to acquire new behaviors and values (Elmore, 2000; Schrum & Levin 2016, Moos & Johansson, 2009). These individuals must foster teacher development to build internal capacity for improvement (Moos & Johansson, 2009).

Focusing specifically on school improvement associated with technology, Brockmeier et al. (2005) stated that, "without a thorough understanding of computer technology's capabilities, principals will not be ready to provide the leadership in technology necessary to restructure schools" (p. 46). The 2016 National Educational Technology Plan: Future Ready outlined similar guidance for the need to effectively use technology in practice. School leadership requires one to foster intellect, commitment, emotions, interpersonal abilities, and creativity (Matthews & Crow, 2010). A principal's ability to constantly learn is of paramount importance to focus and facilitate learning communities (Fullan, 2001; Matthews & Crow, 2010; Marzano, 2003). According to Newmann and Wehlage (1995), "schools with strong professional learning communities were better able to offer authentic pedagogy and were more effective in promoting student achievement" (p. 3). The primary role of administrative leaders is to facilitate a culture of skill and knowledge enhancement held together by productive relationships (Elmor, 2000).

Merriam et al. (2007) commented on shifts affecting leaders as learners when they wrote, "Technology and the knowledge explosion are among the strong elements of our post-industrial society that affect leaders as learners and facilitators of learning" (p. 67). Yet,

according to Branch (2011), “there is very little research that addresses how to give school leaders the necessary skills to lead and sustain professional learning communities” (p. 3) especially through the means of technology. Carroll (2000) pointed out that technologies, when applied appropriately, can optimize time on task to maximize success of PLCs. When exploring principal's virtual learning, Brennan (2013) found a link between participation in virtual communities of practice (VCOP's) and organizational learning in part due to the ability of connectivity to allow for constant engagement and continuous learning. Schrum and Levin (2016) found use of social media was common by school leaders for their own professional growth.

Some leaders are leveraging the aspects of hyperconnectivity, tapping into networks, connecting, adapting...engaging in the *new culture of learning* (Thomas & Seely Brown, 2011). This “new” way of learning is what many school reform efforts are striving for, personalized, real time, interest driven, connected learning (Ito et al., 2009). However, many institutions are still operating from a place of fear, ignoring and fighting against connected learning in part because they are missing essential leadership elements, such as a leader that models and uses technology effectively (Scheninger, 2014). McLeod (2015) pointed out two means by which leadership can cripple efforts to move forward and transform learning: (1) by adding technology without the strong leadership and vision needed to adjust instruction, and (2) by blocking technology altogether due to fear of change. These two means equate to sparse replicative use of technology with little impact. McLeod commented on the lack of change associated with blocking and banning technology when he wrote, “it’s just schools clinging to the past and elevating what is comfortable or familiar over the potential of technology to help them better deliver on their school missions (“Fear,” para. 2).

Schrum and Levin (2009) declared, “a school leader must do many things simultaneously to lead and support educators to function in a 21<sup>st</sup> century school and to

employ technology when appropriate” (p. 103). When researching the impact of technology integration on traditional roles and responsibilities of principals, Flanagan and Jacobsen’s (2003) research illuminated “technology leadership to be more than resource acquisition and management” (pp.124-125). They found technology leadership is woven into multiple dimensions of schooling. Their work also found that principals are generally underprepared to assume roles related to holistic technology leadership in general. Flanagan and Jacobsen discussed the keys to deep school reform linked to leadership as “principals must play a key role and be given meaningful opportunities to develop the skills and dispositions necessary for leadership in the current educational milieu” (p. 140). Furthermore, according to Flanagan and Jacobsen, “Increasingly, school administrators are required to assume leadership responsibilities in areas with which they are unfamiliar, and for which they have received little training” (p. 124). Brockmeier et al. (2005) investigated principals’ relationship with computer technology. Using items on the Computer Technology Survey these researchers discovered that principals need to better understand how best to use technology.

Daggett (2008) stressed the complex and pivotal role of leaders when he wrote, “While all educators must play key roles in changing schools, those in leadership positions bear an even greater burden. They must respond to change appropriately, and they must show others the way” (p. 61). Yukl (2002) and Northouse (2004) both outlined the following categories for the leader’s behavior: technical, interpersonal and conceptual. Yukl presented three specific types of leader behavior: task-oriented, relations-oriented, and change oriented. Leaders typically engage in all three types of behavior, as they are not optimal across all situations (Yukl). The external environment plays an important role in determining the best mix of leadership behaviors (Hoy, 2008).

“With nothing standing still and everything changing” (Heraclitus), the act of school leadership is amplified by technology, creating the context where change-oriented behavior is essential. According to Hines et al. (2008), “Technology has become the catalyst for change in so many areas related to school leadership” (p. 288). Dufour and Fullan (2013) stressed the need for educational leaders to embrace change in order to build strong sustainable school culture. To Sheninger (2014), school leaders need to embrace a “combination of mindset, behaviors, and skills that are employed to change and engage school culture through the use of technology” (p. xix). According to Sheninger (2014), school leaders today need to embrace “digital leadership” (p. xx). Digital leadership as described by Scheninger is in line with earlier evidence that a principal’s priority and use is in line with whole school technology usage (Lecklider, Clausen, & Britten, 2009).

Principals spend a great deal of time on their computers (and increasingly on their smart phones); and as early as 2003 Schiller noted, “It is clear that knowledge of the role of information and communications technology (ICT) in the work life of the school principal and the acquisition of appropriate skills to use this knowledge needs to be understood by principals” (p. 179). Previously Ritchie (1996) articulated that technology-related skills are needed for administrators to do their jobs well. Those that have the skills and competencies to benefit from using a computer have the capacity to participant in society and the knowledge economy (OECD, 2010). Schrum and Levin (2016) also pointed out school leaders must have this capacity. Cohen’s (2014) work highlighted school leaders thoughts about the need for connectivity when he articulated, “having the capability to access email and the web from anywhere at anytime was vital to work” for leaders to connect and collaborate (p. xxii). Brennan (2013) described principals’ broad responsibilities as building leaders, “through technology, to set the stage for connecting faculty to information and learning communities as never before” (p. 10).



Structures of time, space, and communication patterns are messy yet integral parts of school leadership. Studies looking beyond technology tool usage are scarce (McLeod, Bathon & Richardson, 2011). D. Rutkowski, L. Rutkowski, and Sparks (2011) looked at distributed leadership and technology integration. Dexter's (2011) work focused on team leadership aspects of 1-to-1 student laptop initiatives, and found that the distribution of leadership is needed for successful implementation of devices for learning.

Anderson and Dexter (2000) along with Dexter's work in 2005 and 2011, found that technology leadership played an essential role in technology outcomes. Anderson and Dexter (2005), through their comprehensive study of digital environment leadership, named administrator leadership as a basic driver for effective technology integration. Dexter's (2011) work found schools "with instruction-oriented visions for their laptop programs created a more compelling setting for technology integration through strong technology leadership practices" (p. 184). Hughes, McLeod, Dikkers, Brahier, and Whiteside (2005) pointed out that strong leadership is needed for technology-based school reform. Later A. Edmunds, Macmillian, Specht, Nowicki, and G. Edmunds (2009) articulated, strong school leadership is needed to set appropriate policies, cultivate positive school culture, and facilitate professional development which leads to successful schools. Such successful school reform is strongly correlated with successful use of technology by teachers (Anderson & Dexter, 2000; Dexter, Anderson, & Ronnkvist, 2002; Windschitl & Sahl, 2002; Zhao, Pugh, Sheldon & Byers, 2002; Zhao & Frank, 2003). Zhao and Frank (2003) found specifically a "learning ecology" of teachers, and teaching teachers supported by leadership was particularly successful in implementing technology that transforms learning aided by strong leadership.

According to Cohen (2014), "Technology leadership is an important area for further study because of the complexity of technology and its unique challenges" (p. 14). Aside from Dexter's (2011) opinion, there is little connection between technology and instructional

leadership (Cohen). Cohen's work identified overlaps of instructional and technology leadership such as shared decision-making associated with improvement. Cohen pointed out that "efforts to seamlessly integrate technology with the goal of increasing student achievement and productivity may be met with mixed results in terms of teacher "buy-in" and learning outcomes" (p. 3). Bebell, Russell, and O'Dwyer (2003) noted that these mixed results have been due to problems with decision-making and implementation rather than the actual technology, and noted the need for school leadership programs to take a more nuanced approach "to preparing educators to use technology in and out of the classroom for professional purposes" (p. 307).

The work of Weston and Bain (2010), and Zhao and Frank (2003) found teacher buy in or resistance to be a major impediment to technology integration in the classroom and stressed the need for involvement of leadership. Awareness of the leader's knowledge and use of technology is a logical place to start from as the need for leadership related to classroom use grows.

School leaders must simultaneously lead and support educators to function in a 21<sup>st</sup> century school including employing technology appropriately (Schrum & Levin, 2009, 2012, 2015 & 2016); yet according to Suarez (2012), "supporting educational leaders with technology is an emerging concept" (p. 78). Hughes et al. (2005) pointed out that principals may be the most important factor affecting successful technology integration, "surprisingly little attention focuses on the technology-related needs of school administrators" (p. 20). In 2007, McLeod leveraged the power of connected technology when he asked educational technology bloggers to participate in what he called "Leadership Day" by posting "something related to effective school technology leadership: success, challenges, reflections, needs, wants," on his widely read blog *Dangerously Irrelevant* with its 10,000+ subscribers. Fingal (2009) pointed out McLeod's purpose was "simple," help. McLeod first wrote:

Many of our school leaders need help when it comes to digital technologies. A lot of help, to be honest. As I've noted again and again on this blog, most school administrators don't know:

- What it means to prepare students for the 21st century;
- How to recognize, evaluate, and facilitate effective technology usage by students and teachers;
- What appropriate technology support structures (budget, staffing, infrastructure) look like or how to implement them;
- How to utilize modern technologies to facilitate communication with internal and external stakeholders;
- The ways in which learning technologies can improve student learning outcomes;
- How to utilize technology systems to make their organizations more efficient and effective;
- And so on...

Administrators' lack of knowledge is not entirely their fault. Most of them didn't grow up with these technologies. Many are not using digital tools on a regular basis. Few have received training from their employers or their university preparation programs on how to use, think about, or *be a leader* regarding digital technologies. (McLeod, 2007, "Calling All Bloggers!-Leadership Day")

In 2007 twenty two posts were submitted in response to McLeod's call for help titled *Leadership Day*, and comments and conversations started to fly, in 2008 he did the same, simply asked for advice on behalf of educational leaders in need, this time thirty posts came in, in 2009 the same thing happened – yielding 104 posts. In 2010, 114 posts ... and again, in

2011, 2012, 2013, 2014, and 2015. Clearly the issue of educational leaders simply needing help with what McLeod originally posted in 2007, “use, think about, or be a leader regarding digital technologies” is still part of the relevant and recent conversations for educational leaders.

The Collaborative for Technology Standards for School Administrators created *Technology Standards for School Administrators* in 2001 to “promote the idea that specific skills, knowledge, and practice were required for administrators to be ready to support the appropriate use of technology in a school” (Schrum, Galizio & Ledesma, 2011, p. 242). This group’s work evolved into what are presently known as the International Society for Technology in Education (ISTE) *National Educational Technology Standards for Administrators* (NETS-A). The NETS-A standards are:

- **Visionary Leadership:** Educational Administrators inspire and lead development and implementation of a shared vision for comprehensive integration of technology to promote excellence and support transformation throughout the organization.
- **Digital Age Learning Culture:** Educational Administrators create, promote, and sustain a dynamic, digital-age learning culture that provides a rigorous, relevant, and engaging education for all students.
- **Excellence in Professional Practice:** Educational Administrators promote an environment of professional learning and innovation that empowers educators to enhance student learning through the infusion of contemporary technologies and digital resources.

- Systemic Improvement: Educational Administrators provide digital age leadership and management to continuously improve the organization through the effective use of information and technology resources.
- Digital Citizenship: Educational Administrators model and facilitate understanding of social, ethical and legal issues and responsibilities related to an evolving digital culture. (ISTE.org/NETS, 2009)

In 2012 Richardson et al., completed a systematic analysis of the current literature regarding school technology leadership structured and conceptually framed around the NETS-A. Their findings revealed mixed progress towards leaders increased knowledge and skill. Work of Matthews (2002) and Schrum et al. (2011) outline what Richardson et al. (2012) synthesized in their review of previous findings, principals are not necessarily adequately prepared to use technology effectively, as well as facilitate its use for others in the communities they lead. Richard et al. also revealed that the NETS-A “standards were covered to some degree”, but that there was “a glaring lack of in-depth research around this topic” (p. 131), and “future scholarly research opportunities are plentiful” (p. 144). They stressed that “in particular, scholars can seek to provide more qualitative examples of successful administrator implementations” (p. 144).

The work of McLeod et al. (2011) pointed out that only “a few researchers have begun to investigate what it means to connect the spheres of school leadership and digital technology” (p. 288). Their work articulated the intersection of leadership and digital technology in three domains, the first being, using technology to transform delivery of content or communication with little or no transformation of content. The second facet focused on leader’s usage and skill around digital productivity and communication tools, and the third and most lacking facet being shift in administrators as technology leaders (McLeod et al.). According to McLeod et al.:

For every field of school leadership preparations and scholarship, individual and programmatic adoptions of a technological lens could be incredibly helpful. But instead, the vast majority of us continue to produce new articles that ignore the digital world around us. We also continue to turn out new administrators that are woefully unprepared to be effective leaders in the area of technology, even though we know that if the leaders do not “get it,” their systems –most importantly their students- surely will not either. We cannot continue to go on this way. If we care about societal and school relevance, it is time for us to pay more attention to digital technologies. (p. 294)

The majority of existing research aimed at linking school leadership and technology has been focused on technology tool knowledge and skill (McLeod et al.). Results from such studies found school leaders in general have limited technical knowledge (Flanagan & Jacobsen, 2003; Gerard, Bowyer, & Linn, 2010). Briggs and Makice (2012), and Corbert, Yee, and George (2016), pointed to a need to have a certain level of digital fluency in order to be proficient and comfortable in achieving desired outcomes with technology.

According to Suarze (2012), “As technology increases in education, administrators’ skills need to adapt to the new demands of the 21<sup>st</sup> century school organization” (p. 29); yet little attention is paid to the level of technological expertise of principals. Flanagan (2003) stated, “If school principals are to effectively inspire and lead a staff in integrating technology across the curriculum, then professional development opportunities must be available for principals to develop these skills and dispositions” (p. 140). Schiller (2003) studied perception of tool use competence of 217 school principals, and found a wide variation in their perceptions of ICT knowledge and skill, as well as actual skill. Other studies focused investigation on communication technology usage and attitudes found similar variations (Diokno, 2010; Hines et. al, 2008).

Work of Brennen (2013), Dexter (2011), Niemi, Kynalahti, and Vahtivuori-Hanninen (2012), Schiller (2003), and Suarez (2012) are in line with Flanagan & Jacobsen's (2003) argument, "Ongoing research is needed to understand the evolving role, competencies and dispositions towards technology and learning that principals require in order to be effective technology leaders, and how these are best developed and supported in practice" (p. 140). McLeod and Richardson (2011) pointed out that there is a lack of research on leadership of technology in general. According to Richardson et al. (2012):

There is still much work to be done as the NETS-A enter their second decade of existence. The literature produced to date does show that the field of educational leadership, globally, has at least begun to respond to the technology leadership challenges articulated in the NETS-A that schools are facing. With the many remaining holes in the literature as well as the lack of in-depth research on many vital areas, the scholarly field has not yet provided the necessary resources for educational leaders working to implement technology-facilitated changes in learning and teaching. These leaders are facing many difficult and daily challenges, from purchasing to professional development. Further, students and communities need leadership from principals and other administrators in how to be smart digital citizens and consumers of these new resources. Thus, the challenge facing school leaders is substantial, with only a less-than-extensive literature base to turn to for assistance. Technology-driven change will only continue to accelerate. (p. 145)

Schools leaders have long prided themselves on collection of technical "tools" to fix problems; some in the form of initiatives, or assessment methods, and others in the form of what many think of first when they think technology ... computers. According to McLeod et al. (2011), "the tools are the low-hanging fruit" (p. 293), and "the more significant issue is what effective leadership in the domain of school technology looks like" (p. 296).

The 2010 report, *School Principals and Social Networking in Education: Practices, Policies, and Realities*, stated strong principal leadership is needed for appropriate technology adoption. Webber (2003) expressed the need for school leaders to adapt with new technologies, “new technologies are forcing education leaders to retool as they seek to understand how to lead and support the members of their learning communities” (p. 122).

“Whether we tweet or send hand written notes, our jobs have been irrevocably changed by technology” wrote Hoerr, a head of school in New York City (2011b, p. 88). In our increasingly digitized world, school leadership needs to include technology leadership (Anderson & Dexter, 2005; Brennan, 2013; Cohen, 2014; Matthews, 2002; McLeod, 2008; Picciano, 2011; Sheninger, 2014; Shiller, 2003; Suarez, 2012; Webber, 2003; Zhao, 2012). The need to “strengthen leadership” was a focus of the U.S. Department of Education’s National Educational Technology Plan (NETP 2010 & 2016). According to the NETP (2010), “When learning is powered by technology the role of the educational leadership changes dramatically. Having leaders understand the role of technology is essential” (p. 65). The next section articulates the need for a humanistic approach toward the evolving behaviors and expectations of school leaders.

### **Humanistic Approach to Technological Change (and Research)**

Viewing the work of educational leaders as mechanical, a toolkit to fix problems, is incomplete. Equally, as misunderstood and incomplete is the view of technology only as tools that do things for us (Turkle, 2005). What is needed is a more humanistic view of educational leader interwoven with technology. Matthews and Crow (2010) noted the role of principal is “that of a professional who responds to messy issues and situations; who has to have passion and commitment to ensure that all students learn and develop” (p. xvii). Such a role requires one to foster intellect, commitment, emotions, interpersonal abilities, and creativity (Matthews & Crow). Unfortunately, what Matthews and Crow articulated



regarding the role of principal today has had little attention interwoven with technology.

Turkle's (2005) work with its particular emphasis on the human side of technology stressed looking

beyond all the things a computer does *for* us (for example, help with word processing and spread sheets) to what using it does *to* us as people, this view allows one to go further, offering moments when we learn something that breaks with conventional wisdom. (p. 11)

As technology further weaves itself into the ways in which educational leaders do work in school and personally navigate the world in general, the mere objects, be them smart phones, laptops, or their applications within, have largely only been studied in the objective sense.

As the demands of educational leaders continue to evolve, it is time to consider the significance of the role of objects, past their "instrumental power" towards "objects as a companion in life experience" (Turkle, 2008, p. 5). According to Turkle, viewing "technology to be as much an architect of our intimacies as our solitudes. Through it, we see beyond everyday understanding to untold stories about our attachments to objects" (p. 29).

Turkle stressed the importance of paying attention to the subjective side of the technological experiences, "how what we have made is woven into our ways of seeing and being in the world" (p. 3). Her earlier work in 1984 is ever more valid today in an era of hyperconnectivity. In 1984, Turkle wrote:

Most considerations of the computer concentrate on the "instrumental computer," on what work the computer will do. But my focus here is on something different, on the "subjective computer." This is the machine as it enters into social life and psychological development, the computer as it affects the way that we think, especially the way we think about ourselves. (p. 19)

Her work, revealed the strong feelings and associations personal computing technology in its infancy evoked, long before many of the invasive aspects of hyperconnectivity existed. Her conversations with the earlier pioneers of home computers revealed the search for identity and findings of seeing oneself as in control. Conversely, her conversations with parents regarding their children's use of electronic toys revealed shock and fear, "The toys hold the attention of children who never before sat quietly, even in front of a television screen" (p. 19).

Rushkoff (2011) articulated the need to think subjectively about present digital technologies when he wrote, "Digital technologies are different. They are not just objects, but systems embedded with purpose. They act with intention. If we don't know how they work, we won't even know what they want" (p. 148).

Although psychologists such as Turkle (1984, 2005, 2008, 2011, 2015), Cottle (2001) and Goleman (2013), and neuro scientists Landman, Sharma, Sur & Desimone (2014), Levitin (2012), Zanto & Gazzaley (2013) and many others have put forward much scholarly attention to the intersection of the individual and technology, from both the strict empirical and emerging participatory of qualitative research perspectives, there has been little focus on this intersection in the educational leadership literature. According to Creswell (2007), the qualitative approach is appropriate when "we need a complex, detailed understanding of the issue" (p. 40). To describe individual experience of the phenomenon, phenomenological inquiry attempts to uncover the essence of individual experience (Creswell). Van der Mescht (2004) articulated phenomenological research as "a potentially powerful way of making sense of educational practitioners' (and learners') sense-making, and can lead to startling new insights into the uniquely complex processes of learning, teaching and educational managing and leading" (p. 1).

Little phenomenological work has focused on the intersection of educational leadership and technology. Hines et al.'s phenomenological work in 2008 pointed out the multitude of unanticipated consequences and phenomena with increased electronic communication. Findings from their study highlighted issues of time spent at the computer overriding face-to-face conversations, and increased volume of communication leading to long work hours for high school principals. Their findings additionally uncovered vast difference in participants' descriptions and views of changes in role of the principal in times of increased information and access, outlining the need for future scholarly exploration focused on descriptions of individual leader experiences relating to such changes.

Leadership today in schools face vulnerabilities and challenges rarely acknowledged. By focusing on self-described leader struggles and wounding experiences, Ackerman and Maslin-Ostrowski (2002) showcase the power of the human voice, and its ability to uncover both strengths and vulnerabilities ever present in leadership today. Ackerman and Maslin-Ostrowski noted the specific need to explore the humanistic side of technological change and leadership when they wrote:

A large conversation is taking shape today within our emerging ever-expanding variety of technologies permitting individuals, as well as schools, to communicate and share information and knowledge with each other in a timely, instantaneous way and at blinding speed. The advent of this exciting technology poses even more adaptive challenges to educators who place a high value on natural, open, and honest communication. Clearly, we must remember to keep our own human voices unmistakably real in the so-called information age so we can enable and nurture humane organizational structures, forms, and, especially, leadership that remains passionately committed to human learning in all its infinite variety. (pp. 1499-1503 Kindle)

Today hyperconnected school leaders have a close relationship with technology, living, learning, and leading with and through it and alongside its powerful pull, but little is known about their shared experiences that describes this relationship.

### **Conclusion**

This review of related literature helps shape the reader's understanding of rapid technological change, and its effects on educational leadership and society as a whole. The review of literature for this proposed study started broadly with the topics of technological change, its disruptive nature and specific examples of how it is impacting leadership and schooling. Next, paradoxes of wellbeing, relationships, communication, and cognition were explored uncovering complexities that now exist school leaders must navigate. Following, the changing role of school leadership related to increased technology was shared highlighting a gap in existing literature related to the humanistic side of technology and the appropriateness of the descriptive phenomenological method approach and the focus of this study. The next chapter will outline the methodology of this proposed study.

### **Chapter Three: Methodology**

This chapter provides a description of the study's design including: methodology, research questions, participant selection, role of the researcher and, procedures to account for credible data collection and analysis. The purpose of this qualitative descriptive phenomenological study was to analyze, describe, and present a new understanding of leadership from the shared experiences of international school leaders in hyperconnected learning environments at the middle and high school levels. First, the rationale and justification for the match between the focus of this study, hyperconnected leadership, and the qualitative phenomenological approach is articulated.

#### **Research Paradigm Justification and Rationale**

In an attempt to gain access to and describe the lived experiences of hyperconnected educational leaders, this study was designed using Giorgi's (2009) descriptive phenomenological strategy of inquiry. A leader's physical and mental wellbeing is threatened if leaders do not appropriately navigate hyperconnectivity in their increasingly digitized and connected role (Goleman, 2013; Levitin, 2014; Levy, 2012). Such a venerable situation leaves leaders and the learning communities they lead at risk. A holistic descriptive picture of leadership experiences related to the phenomena of hyperconnectivity is required to address the problem of this study, thus procedures for conducting a descriptive phenomenological study are appropriate. According to Creswell (2007):

The type of problem best suited for this form of research [descriptive phenomenology] is one in which it is important to understand several individual's common or shared experiences of a phenomenon. It would be important to understand these common experiences in order to develop practices or policies, or to develop a deeper understanding about the features of the problem. (p. 60)

To describe individual experiences of the phenomenon, phenomenological inquiry attempts to uncover the essence of the individual experience for a specific phenomenon (Creswell, 2007).

A descriptive phenomenological approach was the most appropriate method for this study due to the nature of the central question which calls for data obtained from the lived experiences of the participants related to the phenomenon of hyperconnectivity. It was the best qualitative approach to understand the direct impact hyperconnectivity has on the lives of the participants. According to Patton (2002) the phenomenological approach to inquiry, requires describing participant's experience to the phenomena, "how they perceive it, describe it, feel about it, judge it, remember it, make sense of it, and talk about it with others" (p. 104). Giorgi's descriptive phenomenological approach shaped the data collection, and analysis "to capture as closely as possible the way in which the phenomenon is experienced" (Giorgi & Giorgi, 2003b, p. 27).

The descriptive phenomenological method allows for descriptions of the experiences from participants' lifeworld. According to Giorgi (2009), "the descriptions provided by the experiencers are an opening into the world of the other that are shareable" (p. 96). Such description allowed for experiences to be shared in a powerful way for educational practitioners sense making as they recognize themselves in their individual context (Van der Mescht, 2004). The bases for participant descriptions are experiences within the context of their natural lived-through situations. The shared lived context were selected by the participants themselves as this research sought a description that is as close to, as possible, the actual lived-through experience(s) (Giorgi). Essences of the meaning were sought by the researcher as parts of the individual participant's whole meaning of the phenomena, hyperconnectivity. To Creswell (2007), quality in phenomenological research comes from overall essence of the experience from participants which includes "descriptions of the

experience and the context in which it occurred” (p. 216). Access to such essences started with allowing purposefully selected participants to describe their experiences of the phenomenon of hyperconnectivity.

### **Research Questions**

According to Creswell (2007), “Qualitative research questions are open-ended, evolving, and nondirectional” (p. 107). In qualitative research, questions are in two forms: a central question and subquestions (Creswell). The central question for this study was overarching and sought data related to the participant’s meaning of the phenomenon as a basis for inquiry. The central question was supported by six subquestions and it is through the analysis of data related to these six subquestions that an answer to the central question evolved. This study used the following central and subquestions:

**Central question.** How is hyperconnectivity experienced by school leaders?

**Subquestions.** Subquestions for this study emerged from the literature review. Stake (1995) presented a model for conceptualizing subquestions by categorizing them into issue-oriented or topical questions. According to Creswell (2007), issue-oriented questions “take the phenomenon in the central research questions and break it down into subtopics for examination” (p. 109). Topical subquestions ensure the procedure of inquiry includes foreseen information needed to form a complete description. Such topical questions are included to yield authentic descriptions of personal experience of the phenomenon from each participant (Eisner, 1991). Subquestions one through three are issue-oriented, while four through six serve to present topical information:

1. What are the contexts of hyperconnected experiences?
2. What are leaders’ perceptions about their hyperconnected experiences?
3. What are thoughts associated with hyperconnected experiences?
4. What impact does increased connectivity have on leader communication?

5. What impact does increased connectivity have on leader relationships?
6. What impact does increased connectivity have on leader decision making?

Developed and justified from the review of literature in Chapter Two, subquestions informed the central question. The following paragraphs link each subquestion with supporting literature.

*1. What are the contexts of hyperconnected experiences?*

Increased connectivity creates the context for leaders to have little time for reflection in action which is needed to appropriately respond to the demands of their roles as leaders of learning, and, as such, threatens a leader's ability to lead reform efforts (Hoerr, 2011a). Shirky (2008) pointed out many barriers associated with physical time and space that traditionally protected leaders are now gone. Many previous works in focused on business leaders showed new barrier free contexts resulting in blurred work-life domains, and lack of work-life boundaries (Butts et al., 2015; Chelsey, 2014; Derks et al., 2015 &). Levy (2009) argues this new barrier free connected context creates conditions where the brain can easily become overloaded. To Weinberger (2012) attending to non-stop information can become a program is not managed carefully.

*2. What are leader's perceptions about their hyperconnected experiences?*

Leaders need to be aware of their relationship with technology (Rosen et al., 2012; Turkle, 2015). Case (2010), Goleman (2013), Levitin (2014), and Rushkoff (2013) all expressed the double-edged nature of connective technology, and stressed attentiveness to both its positive and negative aspects. Often the ways individuals are using technology is making themselves physically and mentally sick (Hammerness et al., 2011). Those that are constantly always on, chasing fast moving streams of email inboxes, twitter feeds, and other digital communication, face a dangerous downward spiral toward chronic stress, lack of sleep, and are mentally unable to keep up (Rosen et al., 2012, 2015). Devon (2010) and Morgan (2014) argued



principals perceive themselves to have increased stress associated with the ability to always be connected.

*What are thoughts associated with hyperconnected experiences?*

To Sheninger (2014), school leaders must embrace a mindset to engage school culture through the use of technology. Such technology is a cognitive tool that can transform traditional ways of navigating one's world (Weston & Bain, 2010). According to Weston and Bain, "When technology enables, empowers, and accelerates a profession's core transactions, the distinctions between computers and professional practice evaporate" (p. 10). Previous works focused on business settings showed individuals had both negative and positive thoughts related to the access mobile technology provides (Cousins & Varshney, 2009; Derks et al., 2015 & 2016; Thomas, 2014; Wajcman & Rose, 2011).

*4. What impact does increased connectivity have on leader communication?*

Facets of relational trust linked strongly to school leadership and competence, are critical factors in high level collaboration in distributed environments (Bryk & Schneider, 2003). These facets are dramatically altered in communities that embrace computer mediated communication. Time and place displacement, and lack of verbal cues are facets of digital communication often misunderstood (Case, 2010; Rushkoff, 2013). The complexity of such communication to Sherblom (2010) is due to its mediation through digital devices. According to Sherblom such communication is "more than a conversation," he described it as "personal, authentic, socially meaningful activity, embodied within a community" (p. 502). The work of Schrum and Levin (2016) pointed out learning how to effectively leverage technology to communicate within their communities is a challenge for school leaders. Adding to the complexity, Chelsey (2014) argued there is a possible change in expectations around response time associated with digital communication.

*5. What impact does increased connectivity have on leader relationships?*

Digital communication can elicit feelings of connectedness, and loneliness at the same time when one consumes such messages separate from others (Turkle, 2011). According to Turkle (2012):

Human relationships are rich; they're messy and demanding. We have learned the habit of cleaning them up with technology. And the move from conversation to connection is part of this. But it's a process in which we shortchange ourselves.

Worse, it seems that over time we stop caring, we forget that there is a difference. (*A Flight From Conversation*, para. 11)

Effective leadership for change is enhanced by the strength of interpersonal relationships, and is a critical element in school level factors directly influencing student achievement (Marzano, 2003). Turkle (2015) argued individuals must reclaim conversation, face-to-face, to ensure strong relationships.

#### *6. What impact does increased connectivity have on leader decision making?*

According to Shirky (2008), connectivity changes leadership hierarchy, “the advantages, of the habitual 20<sup>th</sup> century norms institution enjoyed, a relative monopoly on tight management of information and tight coordination of action are gone” (UsNowFilm, 2008, 00:05). The dimension of shared decision making is a primary trait of effective school leaders (Friedkin & Slater, 1994).

### **Participants**

Following the suggestions of Creswell (2007), finding people who the researcher had access to was an essential first step in qualitative data collection. Such a process started with purposeful selection, this according to Creswell, is “a group of people that can best inform the researcher about the research problem under examination” (p. 118). Participants for this study were those that have, by virtue of their experience, the potential and ability to inform the understanding of hyperconnected leadership from accredited international schools.

There is vast disagreement regarding classification of international as it relates to schooling, as well as the definition of what makes a school an international school (Hayden & Thompson, 2008; Nagrath, 2011). At the heart of disagreement is what Cambridge (2003) outlined as a tension international schools face encapsulated in competing post-colonial and global civil society idealism. Hayden and Thompson (2005) pointed out cultural diversity is a commonality that all “international” schools have indisputably in common. Globalization accounts for recent emergent growth in both the number and variance of type of international schools, however according to Keller (2015), international schools have long been characterized by, “expansion, diversification, decentralization, independence and exploration” (p. 3). International schooling is a growth industry with hundreds of schools starting up around the world and self-selecting themselves to be international for a variety of reasons (Brummitt, 2007). It is estimated that over 7,000 “international” schools exist globally (ISR, 2014). Each unique school has contextual variations in level of organization, interaction with local community of their host country, and larger cultural-environmental factors (Hayden and Thompson, 2008). However, commonalities between standards for accreditation membership in regional and global organizations set the context for ad hoc networks of like schools (Hayden and Thompson, 2013). For this study, international schools were specifically selected due to their voluntary membership through accreditation in regional and global organizations.

According to the North Eastern Association of Schools, “An accredited school has the resources to achieve its mission and educational objectives and provides evidence that its students benefit from the curricular and co-curricular program offered” (“Commission on International Education,” n.d.). Due to the global nature of this study, the following accreditation organizations will be included: CIS, EARCOS, ECIS, NEAS and WASC. All

of these accrediting organizations service a similar purpose, providing outside validation of quality for those schools with which they grant accreditation status.

**Selection justification and rationale.** The 15 participants interviewed for this study were purposefully selected. This number fell within Polkinghorne's (1989) recommended range of 5 to 25 for a phenomenological study. According to Creswell (2007), "It is essential that all participants have experience of the phenomenon being studied" (p. 128). This study's participants included individuals in administrative international school positions at the middle and high school levels who had experienced hyperconnectivity. Purposeful selection of the participants were school leaders within accredited non-for-profit international school that have embraced one-to-one computing, including ubiquitous open Wi-Fi access, and personally use a mobile computing device. International schools were particularly suited to embrace change due to lack of government constraints, and starting in the early 2000's a group of international schools embraced one-to-one computing initiatives accelerating their connectivity (Bebell, Luthra & Chaudhuri, 2014).

Approximately thirty-seven schools exist that met the selection criterion. These schools have at least one principal position at each the middle and high school level. The facet of one-to-one schooling provided an additional level of assured closeness to the research problem and phenomenon under study. Accreditation indicated that the schools hold current accreditation from two or more accreditation bodies listed above acknowledged within the United States. Such accreditation ensured similar context for leaders work within these schools, such as, a sound educational institution serving a diverse population of students from around the world in the English language.

**Participant protection.** All research pertaining to this study was approved by the Institutional Review Board (IRB) at the University of Montana. Participant confidentiality for this study was protected using the following process. The researcher obtained written

consent from the participants in this study. Such consent outlined the following: (a) all information the participants provided was kept confidential, (b) all identifiable names and facets of the participants were modified or removed at the transcription stage, (c) identity was concealed using pseudonyms, (d) digital recordings of participant interviews were kept only in the possession of the researcher in a secure password protected data storage location using two point authentication dual encryption, (e) digital recordings were permanently deleted once transcripts are accurately verified, (f) all transcriptions, written researcher interpretations, and findings pertaining to the individual participant were available to that participant, and (g) participants were made aware they could voluntarily leave the study at any time.

### **Descriptive Research Phases**

To reveal the phenomenon of hyperconnected leadership, the researcher followed seven descriptive research phases outlined by Giorgi (2009). The first two phases of research were associated with data collection: (a) breaking free from the natural attitude and assume the phenomenological attitude and, (b) procuring raw data in the form of first hand descriptions of experiences related to the phenomenon by interviewing participants. The remaining five phases were associated with data analysis: (c) gaining a sense of the whole by reading all interview transcriptions as many times as necessary, (d) delineating meaning units, (e) transforming meaning units into psychologically sensitive descriptive expressions, (f) synthesizing the general structure of the experiences by combining transformational lived-meaning units into a descriptive narrative statement, and finally (g) creating an abstract description that presents the vital facets of the phenomenon study participants experienced. The data collection steps one and two were essential as they accurately and objectively guided the researcher's work with participants.

## **Role of the Researcher**

Hyperconnectivity, as described by the participants, must be viewed as an ever-present element leaders experience in, and with, our world. Interpretations of the leaders' environment are determined by their hyperconnected experiences. As suggested by Giorgi (2009) the research process started with the researcher slowing down and breaking free from the natural attitude, the attitude of taking things for granted in everyday life. The researcher then assumed the transcendental phenomenological attitude by which objects were viewed from the point of consciousness as to "how they are experienced regardless of whether or not they actually are the way they are being experienced" (Giorgi, 2009, p. 87).

The researcher bracketed out past experiences and judgments from what, in the language of Giorgi, was "presented." This allowed for the essence of the phenomena to appear. This bracketing included claims from objective science and was originated by Edmund H. Husserl the German philosopher (Giorgi, 2005, 2009, 2012). The researcher's consciousness was mindful to the presented experiences and the corresponding analyses, however the leader, in this context, was the center of inquiry. A specific sensitivity to the phenomenon of hyperconnectivity was maintained. The next step was for the researcher to obtain an accurate description in order to accurately describe the essence of the phenomena.

To gain access to the phenomenon, consciousness of the mode of presentation was critical. To gain a precise description, the researcher only solicited concrete details of what the experience is like. The researcher focused participant attention towards revealing consciousness of the phenomena focusing on how it presented itself through verbal description. In an attempt to uncover precise descriptions, participant explanation or interpretation of the experiences associated with the phenomena surfaced through researcher questions and probes.

The researcher was the instrument of data collection and analysis for this study. She is a doctoral candidate in the Department of Educational Leadership at the University of Montana. She is originally from the pacific northwest of the United States, but has lived outside the United States for eleven years at the time of this study. She is an educational technology leader working in an international school in central Europe. She has worked in secondary schools in the United States, Asia, and Europe, as well as taught master level educational leadership courses related to educational technology for a post-secondary institution located in the United States. During the course of her career, she has maintained a closeness to the intersection of educational technology and leadership.

### **Data Collection**

The hyperconnected experiences of educational leaders was the focus of this study. The descriptions of experiences close to the phenomena were the raw data that represented the essence of participant experiences of hyperconnectivity as international school leaders. Raw data in the form of first hand descriptions related to the phenomenon were collected through individual interviews. This collection process was aimed at best revealing the phenomenon under study: hyperconnected leadership.

Twenty five participants were identified that met the selection criteria. Once formal permission to access the participants was established, the researcher solicited participation directly in the form of the *Research Participation Invitation Letter* emailed to each potential participant. Participants were requested to respond to the letter within five business days, and two follow up letters, spaced five days between contacts, were e-mailed to potential participants that did not respond. Seventeen participants originally agreed to participate, which fell between (Polkinghorne, 1989) recommended range (5-25).

Once participants had agreed to participate in the study, follow up communication included: an invitation to arrange an interview time and date, and a *Participation Information*

*and Consent Form* (Appendix E). A final reminder email was sent to participants two days before each scheduled interview thanking them in advance and checking that they are technically ready for the interview to take place using the pre identified voice over Internet protocol (VOIP) client (i.e. Skype). Two of the original seventeen participants did not participate, both for scheduling reasons, an additional participant voluntarily dropped out after cancelling the scheduled interview for the third time.

**Individual interviews.** Following the suggestions from Creswell (2007), the interview format was semi-structured, and open-ended. The researcher conducted VOIP, individual interviews with participants, lasting on average fifty two minutes. Interviews took place in a manner allowing for the same protocol to be followed for all interviews. Before the interviews began, the researcher purposefully engaged with the participants informally by talking about the time zone difference to reduce anxiety and set the context for a safe and productive formal interview.

All interviews started by stating the purpose of the study, aim of the interview, addressing the participant consent form, including permission to record and to use quotations, and providing participants a working definition of hyperconnectivity as outlined in Appendix F, the *Interview Protocol*. The researcher then started the line of questioning by asking participants to describe their experience as a leader in hyperconnected schooling environment.

**Interview questions.** Interview questions were directed and formulated from issue-oriented and topical subquestions that emerged from the literature review. Thirty interview questions, associated with each subquestion are within Appendix F.

**Trustworthiness of the data.** Multiple forms of verification were included to assure consistent, accurate, and unbiased data collection, and help allow participant's true and accurate voice to come through in the researcher's interpretative writings (Creswell, 2007).



For this study trustworthiness is established through the following accuracy and verification procedures.

**Accuracy.** For this study, the researcher employed the following accepted accuracy documentation strategies:

- All interviews were recorded.
  - Two recording systems were used, one primary and one for back up. The primary recording technique that was used is VOD Burner, VOIP recording software, which will capture both audio and video of both the researcher (interviewer) and participant (interviewee) in MP4 format. For backup purposes the researcher used Evernote audio recording software.
- All interview recording files were backed up in two locations: the researcher's computer hard-drive and a dual encrypted online storage system.
- All interviews were transcribed using a professional transcription service. Transcriptions were spot checked for accuracy by the researcher. Each audio file was checked in three random places, all transcription was accurately transcribed.

**Verification.** Credibility for qualitative research has long been centered on verification methods (Creswell, 2007). Creswell noted eight verification methods qualitative research studies can use. For this study the following four were used: (a) clarification of researcher bias, (b) rich, thick descriptions, (c) external audits and debriefing, and (d) member checks when needed (Creswell, 2007, pp. 201-202). This exceeds Creswell's (2013) recommendation for, "using at least two procedures" (p. 253).

Clarification of researcher bias is a critical facet of verification for this phenomenological study. Such clarification is important for the reader to understand factors that may have influenced the researchers approach to inquiry (Creswell, 2007). Following Creswell's recommendation, researcher bias must be addressed when using a qualitative

interpretive methodology. Explanation and concerns on the part of the researcher must be recognized to bring potential personal bias to the surface and allow the researcher to be in a position to best minimize misrepresentation of participant information using bracketing (Giorgi, 2009). The following three areas of possible concern related to the roles in life of the researcher were recognized (a) a doctoral student in educational leadership, (b) an educational technology leader, and (c) an early adopter of hyperconnected technology.

As a doctoral student in educational leadership, this researcher has been studying in this field for seven years. During this time the researcher has developed her own interpretations and beliefs associated with leadership within the educational context. Second, the researcher has held a leadership role in educational technology for the past seven years. During this time, she has developed, analyzed, supported and sustained highly digitized learning environments. Finally, the researcher has experienced personal computing as a student since elementary school, had her first cellular telephone before she graduated high school, and has never known higher education without the World Wide Web. As an educator and educational leader, she has always had access to computing devices with the students and faculty with whom she has worked, and has been immersed in a one-to-one schooling model for nine years at the time of this study.

As part of the dissertation process, debriefing was accomplished through external audits from the dissertation committee. According to Creswell (2007), an outside expert is one “who keeps the researcher honest; asks hard questions about methods, meanings, and interpretations; and provides the researcher with the opportunity for catharsis by sympathetically listening to the researcher’s feelings’ (p. 208).

As a verification method, rich, thick descriptions were needed for readers to consider the transferability of this study (Creswell, 2007). Eisner (1991) as well as Bogdan and Biklen (2003) stressed the importance of a flexible interview approach to allow for authentic

descriptions of participants' experience associated with the phenomenon to emerge. According to Finlay (2009, p. 6), phenomenological researchers, "aim for fresh, complex, rich descriptions of a phenomenon as it is concretely lived" from participants. Such descriptions were sought through open ended interview questions focused into procedural and topical subquestions allowing the participants to tell their story.

Within the data collection process the researcher used member checking by allowing for participants to clarify meaning during the interviews to assure what Merleau-Ponty (1962) articulated as the participants "world-for-me" descriptions of the phenomenon. According to Lincoln and Guba (1985), this is "the most critical technique for establishing credibility" (p. 314).

### **Summary**

Chapter Three articulated the methodology and rationale for the qualitative descriptive phenomenological research design used in this study which focused on hyperconnected educational leadership. The focus of this study emerged from a need identified in reviewing the literature related to hyperconnectivity. Methodology, research questions, participant selection, role of the researcher, and procedures accounting for credible data collection and analysis were described. Ethical implications for data collection and analysis were articulated, including potential bias the researcher brought to this study. Attitudinal assumptions and bracketing were further described as means by which trustworthiness and accuracy of the data were maintained in the data analysis. All aspects of the research design formed the grounds for the researcher to analyze, describe, and present an accurate, credible, and useful study of the phenomenon. The next chapter further describes the analysis process used and associated findings that emerged from the data.

## Chapter Four: Findings

This chapter explains the process for data analysis used in order to describe the experiences of hyperconnected international school principals at the middle and high school levels. The chapter is divided into two sections to efficiently reveal this analysis. First, participants and their school demographic information provides the groundwork for contextualizing leaders' experiences. Second, five phases of data analysis further provides the framework by which themes for this study emerged. Four of the five phases including: (a) verbatim transcription, (b) delineation of meaning units, (c) transformation of meaning units into psychologically sensitive descriptions for each participant, and (d) associated significant statements merged into shared descriptive expressions and are included in this chapter. These sections of the chapter are the structure for presenting the data analyses that led to the findings of this phenomenological research study.

According to Giorgi (2009), descriptions are the opening into the world of others, and even if these descriptions belong “to others, much of the situation in which the experience happened is on the side of the world and thus is sharable” (p. 97). According to Turkle (2005), “New computational objects in the culture serve as ‘objects to think with’ for a vitalized psychoanalytic discourse” (p. 16) as humans interactions with connected information technology increase. The purpose of this study was to analyze, describe, and present an understanding of leadership from the shared experiences of international school leaders in hyperconnected learning environments at the middle and high school levels. A review of the literature related to rapid technological change, and its effects on educational leadership, as well as society as a whole, informed this data collection and analysis. The Central Question that guided this phenomenological study was: how is hyperconnectivity experienced by school leaders? This chapter presents the analyses resulting in detailed

descriptions of fifteen international school principals' hyperconnected experiences informing the results.

### **Demographic Information**

The following demographic information about the participants is presented within Table 1. This information includes, (a) participant pseudonyms, (b) gender, (c) size of the school district, (d) size of school division participant leads, (e) school pseudonym, and (f) geographic region. This information provides the necessary elements to contextualize the data in order to better understand contexts of the participant experience.

Table 1

*Participant demographics*

<i>Pseudonym</i>	<i>Level</i>	<i>Sex</i>	<i>Sch. size</i>	<i>Div. size</i>	<i>Region.</i>
<i>P1</i>	<i>HS</i>	<i>M</i>	<i>3000</i>	<i>500</i>	<i>Central Asia</i>
<i>P2</i>	<i>MS</i>	<i>M</i>	<i>3000</i>	<i>350</i>	<i>Central Asia</i>
<i>P3</i>	<i>MS</i>	<i>F</i>	<i>800</i>	<i>250</i>	<i>South Asia</i>
<i>P4</i>	<i>HS</i>	<i>M</i>	<i>3000</i>	<i>500</i>	<i>Central Asia</i>
<i>P5</i>	<i>MS</i>	<i>M</i>	<i>1500</i>	<i>400</i>	<i>South East Asia</i>
<i>P6</i>	<i>MS/HS</i>	<i>M</i>	<i>900</i>	<i>450</i>	<i>Europe</i>
<i>P7</i>	<i>MS/HS</i>	<i>F</i>	<i>300</i>	<i>150</i>	<i>North Asia</i>
<i>P8</i>	<i>MS</i>	<i>M</i>	<i>1500</i>	<i>400</i>	<i>Middle East</i>
<i>P9</i>	<i>MS</i>	<i>F</i>	<i>1800</i>	<i>500</i>	<i>Europe</i>
<i>P10</i>	<i>MS</i>	<i>M</i>	<i>1200</i>	<i>300</i>	<i>South America</i>
<i>P11</i>	<i>HS</i>	<i>M</i>	<i>1500</i>	<i>500</i>	<i>Middle East</i>
<i>P12</i>	<i>HS</i>	<i>M</i>	<i>1200</i>	<i>400</i>	<i>South America</i>
<i>P13</i>	<i>MS</i>	<i>M</i>	<i>1500</i>	<i>400</i>	<i>North America</i>
<i>P14</i>	<i>HS</i>	<i>F</i>	<i>1400</i>	<i>500</i>	<i>Europe</i>
<i>P15</i>	<i>MS</i>	<i>M</i>	<i>1500</i>	<i>400</i>	<i>Europe</i>

*Notes.* P= Participant, HS = high school, MS = middle school. MS/HS. = middle & high school. Sch. Size. = school size. Div. Size = division size. Location= location of school

Basic P# pseudonyms associated with each participant provides for increased anonymity and efficiency needed to share the data. Data from schools located in fourteen different cities, within thirteen different countries, across four continents are represented in the study. Most participants are not natives of the country in which their school is located,

however to provide additional protection to the participants, this information is not shared. Size of school and division articulated in Table 1 contextualize the number of individuals associated with each leader.

### **Data Analysis**

After accurately collecting data using the first two of the seven descriptive research phases outlined by Giorgi (2009): (1) break free from the natural attitude and assume the phenomenological attitude, and (2) procure raw data in the form of first hand descriptions of experiences related to the phenomenon by interviewing participants, steps three through seven were followed. These steps were specifically followed to inform the data analysis phase to best reveal the phenomenon of hyperconnected leadership: (3) gain a sense of the whole by reading all interview transcriptions as many times as necessary, (4) delineate meaning units, (5) transform units into psychologically sensitive descriptive expressions, (6) synthesize the general structure of the experiences by combining transformational lived-meaning units into a descriptive narrative statement, and finally (7) create an abstract description that presents the vital facets of the phenomenon as experienced by participants in the study.

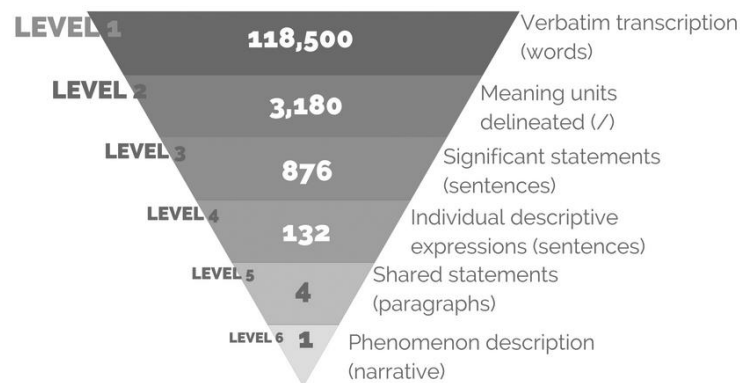
According to Giorgi and Giorgi (2003a), “The outcome of the analysis is based on the psychological meaning discriminations performed by the researcher, and these are not explicitly stated as such by the individuals having experienced it” (p. 249). The descriptive phenomenological method was aimed at describing and clarifying participant meaning of their experience, not to explain or discover causes (Giorgi, 2005). The following protocol for data analysis was followed:

1. Each interview transcript was read through until the researcher understood the general essences of the phenomena as a whole

2. Meaning units were delineated by dividing the transcript into sections, making forward slashes “/” in the written transcription each time the participant shifts their focus of attention during the interview. Once meaning units were identified the researcher summarized and labeled each meaning unit directly related to the phenomenon under study using third person.
3. Meaning units were translated and clarified using language of the researcher. During this step the participant's description became the textual (what) description of the researcher. During this step the researcher maintained a closeness to the focus of the study and phenomena.
4. Participants’ experiences were transformed into psychologically sensitive descriptive expressions. Such expressions were individual, worldly, and personal, following the suggestion of Giorgi (2009).
5. All participant data and researcher analyses of the original data were synthesized into the general structure of the experiences by combining shared transformational lived-meaning units into descriptive narrative statements. **Bold** typeface was used to highlight elements of statements expressing the development of the essences of the phenomena, and structural and textual descriptions as lived by the participants.
6. An abstract description presenting the vital facets of the phenomenon that study participants experienced was then created.

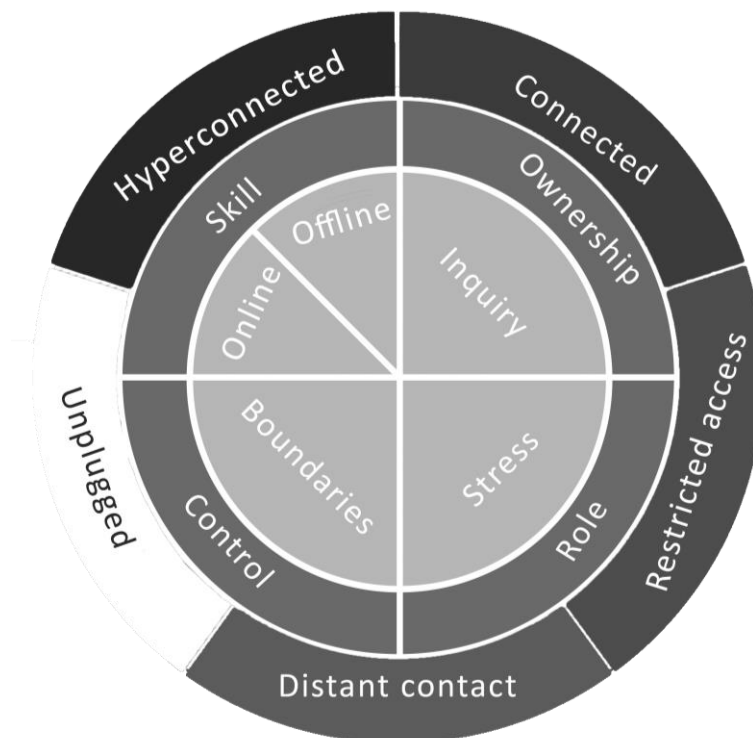
At each level of analysis, the raw data was reduced as the researcher gained a sense of the essential components of the phenomena as expressed by the participants. Figure 2 shows the descriptive phenomenological approach to the purposeful reduction of the data for this study.





*Figure 2:* Reduction of data related to analysis

Following Giorgi's Descriptive Phenomenological approach allowed for de-contextualizing and re-contextualizing the data in distinct phases allowing for the emergence of textual (what) and structural (how) elements. Individual context for connectivity is best seen as a continuum (Genner, 2016). This continuum is represented by the out most ring in Figure 3.



*Figure 3* Emergent elements: textual (inner circle) and structural (outer two circles) elements within the overarching phenomenon of constant connectivity.

Analysis by which these major elements emerged is described in detail at each level, starting with Level One: Verbatim Transcriptions.

**Level One Verbatim Transcriptions.** Individual participant interviews were audio recorded. After recording, the personally identifiable information at the beginning of each interview (levels one through five in Appendix F) was cut from the recording. The individual interviews (starting at level six) were transcribed, word for word, using a professional transcription service. This service included a rigorous privacy policy and strict security measures to ensure participant protection, including a privacy clause signed by transcribers. Next, reading and re-reading the transcriptions as many times as needed allowed for a sense of the whole to be gained. Below is an example of Participant Eight's (P8) description of his connectivity as a hyperconnected international school leader presented in the original form of the raw data.

*P8: I am tied to a mobile phone probably 24 hours a day. It's my alarm clock, it sits by my bedside, I generally turn it off at night, but certainly first thing in the morning I check it for incoming email, or incoming information from other apps that I would use; text messaging apps, WhatsApp. My day starts with getting connected, turning my device back on and often it needs an immediate look at messages or texts that have come in, that are maybe more urgent or need to be dealt with right away. I do go home and I do spend more work time every night, again dealing with the flow of communications that I have to generate. I'll find myself in the night chipping away from 100 down to 20 or 25 [emails]. I would say, I do [have constant connection]. I would say that I find that I am connected a lot of the time but when I think about it. I see people who are more connected than me who don't seem to be making those same decisions. I have to look at the situation and say, "This is just something that I don't like, and how do I switch off?"*

A sense of the whole was gained by reading the transcriptions four times. During this step the structural element of control started to emerge. Several paradoxical aspects associated with participant responses became evident. These paradoxical aspects were noted within researcher memos and provided the necessary understanding of the data to move to the next step of analysis, identifying significant statements associated with meaning units.

**Level Two and Three: Meaning unit delineation and significant statements.** The delineation of meaning units were marked by forward slashes “/” in the transcription each time the participant shifted focus of attention. To organize lengthy material, the researcher numbered each meaning unit and changed the language from first to third person for those statements identified as directly related to the focus of this study. Table 2 is an example of meaning delineation for Participant 8.

Table 2

*Verbatim transcription and associated meaning units*

Verbatim transcription	Meaning units
<p>P8/S2.1: <i>I am tied to a mobile phone probably 24 hours a day. It's my alarm clock, it sits by my bedside, I generally turn it off at night, / S 2.2 but certainly first thing in the morning I check it for incoming email, or incoming information from other apps that I would use; text messaging apps, WhatsApp. My day starts with getting connected, turning my device back on and often it needs an immediate look at messages or texts that have come in, that are maybe more urgent or need to be dealt with right away. / S2.3 I do go home and I do spend more work time every night, again dealing with the flow of communications that I have to generate. I'll find myself in the night chipping away from 100 down to 20 or 25. / S2.4 I see people who are more connected than me who don't seem to be making those same decisions. I have to look at the situation and say, "This is just something that I don't like, and how do I switch off?"</i></p>	<p>S2.1: P8 is tied to his mobile phone 24 hours a day  S2.2: He immediately attends to incoming messages from the time he wakes.  S2.3: He finds himself constantly chipping away at messages, even when he gets home, until they are down to a level at or close to zero.  S2.4: He questions how to switch off yet, keep up. He sees others more connected than himself and wonders if it's possible to disconnect.</p>

*Notes.* S# = Statement number.

Next, verbatim statements such as the one shared in Level One and their associated meaning units were then translated and clarified, in the words of the researcher, in the form of psychologically sensitive descriptive expressions. Such expressions are the textual descriptions of what participants experienced.

**Level Four: Psychologically sensitive descriptive expressions, transformation of meaning units.** In this phase of data analysis, original participant experiences were translated into worldly and personal descriptive expressions in the words of the researcher. Textural [what] and structural [how] elements were developed to help describe, “what happened” and “how the phenomenon was experienced” (p. 156, Creswell, 2007). This translation for each participant included transforming what was described into psychologically sensitive language to reveal the essence of the phenomenon. According to

Giorgi (2009), “applying a psychological perspective to a lifeworld description” (p. 181), is needed for interpretation. Table 3 is an example of this transformation for P8:

Table 3

*Transformation of meaning units into psychologically sensitive description expressions*

Descriptive expressions	Meaning units
P8 contemptuously is tied to his mobile phone 24 hours a day. He resents having to immediately attend to incoming messages from the time he wakes. He finds himself constantly chipping away at messages until he warily gets them down to a level at or close to zero. He question how to switch off when he sees others around him still connected.	S2.1: P8 is tied to his mobile phone 24 hours a day S2.2: He immediately attends to incoming messages from the time he wakes. S2.3: He finds himself constantly chipping away at messages, even when he gets home, until they are down to a level at or close to zero. S2.4: He questions how to switch off yet, keep up. He sees others more connected than himself and wonders if it’s possible to disconnect.

**Level Five: Synthesis of shared descriptive expressions.** During this phase, all participant data and researcher analyses of the original data were synthesized into the general elements of the experiences by combining shared transformational lived-meaning units into descriptive statements. At this phase, even though different words are used to emphasize different aspects of the individual experiences, identical structures form the basis for articulating what is shared (Giorgi, 2009). Supported by the data, distinct shared psychological structures [how] and corresponding textual descriptions [what] emerged from the transformation of individual descriptive expressions into shared statements. These shared statements form the basis of themes discussed in Chapter Five. Table 4 displays four shared statements in association with four structural and five textual elements.

Table 4

*Synthesis of shared descriptive expressions and associated descriptions*

Psychological structure	Textual description	Shared descriptive statements
Control	Personal boundaries	Some participants give themselves permission to connect and disconnect in order to effectively do their job. They manage work life demands by purposefully protecting space. They do so without guilt or frustration they know they have to put themselves first.
Role responsibility	Stress	Some participants do not give themselves permission to prioritize their own time. They are constantly struggling to respond to incoming communication in order to do their job. They believe it is within the professional responsibility of the principal to always be available. They let their connected environment, mostly through email; tell them what to focus on. Their attention is divided and they are at times psychological, cognitively and or physically depleted.
Skill	Offline communication Timing of online communication	Some participants control how they spend their connected time purposefully. They make conscious choices related to their priorities about what and how they connect. They astutely and confidently manipulate their connectivity by purposefully choosing specific tools and or settings to control their attention.
Ownership	Collective inquiry	Some participants shape cultural norms and expectations by purposefully modelling measured use and clearly communicate why they make the choices they do. This includes what and how they prioritize, with what and how they communicate. They actively discuss the pros and cons of connectivity with their school communities to empower all members to make good connected choices.

How participants experienced the phenomenon of hyperconnected leadership was reduced to four main psychological structures: (a) control, (b) role responsibility, (c) skill, and (d) ownership. These structures are interdependent “parts” of the shared meanings of the participants that are psychologically consistent (Giorgi, 2009). These structures describe the psychological context for how the phenomenon was experienced (Creswell, 2007). Table 5 presents a summary of these structures associated with what each participant offered in their description of the phenomena.

Table 5

*Strength of participants' expression of the structures described by shared statements*

P	Control	Role resp.	Skill	Ownership
P1		x	X	
P2		x	x	X
P3	X	X	X	X
P4		x		
P5	X	x	X	X
P6		x		
P7	X			X
P8				
P9	X		X	
P10			X	X
P11	x	X	X	
P12	x	X	x	
P13	X		X	x
P14	X	x	x	
P15	X			X

*Notes.* X= strong presentation by participant of psychological structure, x= some presentation by participant of psychological structure, \_= no presentation by participant of psychological structure, P= participant, & Role res. = role responsibility.

The phenomenological notion of presence and absence are how the explicit data expose the presence of the implicit meanings without them being concretely articulated in the data by the participants (Giorgi, 2009). When considering the whole data, aspects absent in one

participant's explicit data reveal logical implicit qualities that are not verbalized. These implicit qualities are justified by their presence in the data of the other participants (Giorgi).

Intrastructural differences within the descriptions according to Giorgi (2009) form the basis for a "one-to-many relationship between the intuited meanings and the words used to articulate it" (p. 201). Table 6 provides the individual transformed meaning units from the level four analysis used to form the first shared descriptive expression: Control. This statement reveals how participants experienced the phenomenon by controlling connectivity with personal boundaries.



Table 6

*Synthesis of control related shared descriptive expressions: statement one*

Shared statement	Descriptive expressions
<p>Some participants give themselves permission to connect and disconnect in order to effectively do their job. They manage work life demands by purposefully protecting space. They do so without guilt or frustration they know they have to put themselves first.</p>	<p>P1 associates constant connectivity with empowerment and control as it allows him to manage information differently.</p> <p>P3 feels in control of her connectivity as she actively connects and disconnects to meet her needs.</p> <p>P5 believes connectivity increases his confidence and ability to do his job. He does not hesitate to connect to be better informed.</p> <p>P5 is calmly in control of his attention related to incoming messages. He is happy the tools do not distract him, unless he chooses for them to do so, such as his calendar to remind him of face to face commitments.</p> <p>P7 is aware and controlling of her connectivity. She protectively does not let her connectivity erode her wellbeing or time with family. She proactively chooses to go on holiday where there is no connectivity.</p> <p>P9 protectively controls digital connection as something that serves her. She firmly believes connectivity is an integral part to be depended upon and likes that it allows us to connect to more during the day.</p> <p>P10 is connected and begins and ends his day attending to digital communication. He focuses to clear things when he gets home and then disconnects without guilt. He believes people feel like they can get an answer to anything quickly from him but sometimes that is not the case.</p> <p>P10 is pleased that he has access to anything at anytime. He calmly admits this makes it more difficult to disconnect. He has no guilt over giving himself permission to put his physical health first and exercises even when he has 35 emails to respond to</p> <p>P12 enjoys purposefully disconnecting during the first ten days of his holiday to clear his head and prepare for the next term.</p> <p>P13 believes there are two forms of connectivity, work and personal. He intentionally makes good connected choices and draws a line between the two to maintain focus when connecting.</p> <p>P13 religiously protects time for himself to consume information and connect with others from afar. To help secure and protect his ability he knows how and where to make connections is a constantly shifting concept essential to stay well informed.</p> <p>P14 comfortably has a computer or phone within reach but does not have it out at certain times when she needs to focus. She checks her calendar as a reminder. She does not check in with email first thing, she waits until she is ready. She distinguishes between professional and personal communication.</p> <p>P15 is protective of his time with family during the summer and likes the moment he can turn his school issued mobile phone completely off for a while.</p>

These shared descriptive expressions showcase the psychological context in which the phenomenon was experienced synthesized as statement 1 in Table 6.

To assist in the analysis, statements aimed at expressing the essences of the phenomena, and structural and textual descriptions as lived by the participants, are included in **bold** typeface. Such statements are the expansion of shared statements emerging from individual descriptive statements, which emerged as pivotal and significant when re-contextualizing the data.

**Psychological Structure 1: Control.** Participants presented specific aspects related to the degree to which they control connectivity and simultaneous demands of work and life. Those that expressed negative thoughts, associations, and feeling related to their connected experience as leaders also revealed a lack of control over aspects contributing towards their understanding and/or ability to shape such experiences.

*Textual Description 1: Personal Boundaries.* Uniquely tied to the structure of control was the concept of personal boundaries, worth recognizing as an individual aspect of the phenomenon. Emerging from the level three analysis, the presentation of personal boundaries was strongly linked to pivotal and meaningful statements expressed by participants that revealed aspects of control. Data informing the identification of personal boundaries was previously presented within Table 6.

Participants described aspects of protecting personal boundaries associated with control over their connected choices. They expressed the need to keep concrete boundaries along with thoughts, perceptions and feelings associated with being in control of their connectivity. Participants who presented elements of being in control also confidently described putting themselves first. These participants **waited until they were ready to connect**. Having a sense of control over connectivity, participants **actively connected and disconnected to meet their needs**, by upholding personal boundaries. These boundaries

allowed them to attend to role related communication, **when they were ready**. **Giving themselves permission to put their wellbeing first**, participants avoided guilt related to not addressing incessant demands of their time associated with incoming messages.

Participants **made good connected choices** by choosing appropriate times outside of the school day to connect efficiently staying on top of their professional responsibilities while **not letting connectivity erode their wellbeing or time with family**. Participants purposefully unplugged over school holidays by proactively choosing places that did not have connectivity, or turning the school issued phone completely off.

**Psychological Structure 2: Role Responsibility.** Participants revealed specific aspects related to the degree to which they associate constant connectivity as part of their role. Those confronting work-life demands by conforming to being on call to incoming demands related to their role with little or no protected time for themselves expressed negative thoughts, associations, and feeling related to their connected experience as leaders. They expressed being unsatisfied with their attempts to successfully transition to connected aspects of leadership. Table 7 shows the individual transformed meaning units, which evolved from the fourth level of analysis, used to form the second shared descriptive expression: Role Responsibility. This statement reveals how some participants associated their role of principal with the responsibility to be always actively connected.

Table 7

*Synthesis of role responsibility related shared descriptive expressions: statement two*

Shared statement	Descriptive expressions
<p>Some participants do not give themselves permission to prioritize their own time. They are constantly struggling to respond to incoming communication in order to do their job. They believe it is within the professional responsibility of the principal to always be available. They let their connected environment, mostly through email; tell them what to focus on. Their attention is divided and they are at times psychological, cognitively and or physically depleted.</p>	<p>P1 is instinctively disoriented by the blurring of work and personal environments when he uses connected technology.</p> <p>P2 plans for and attempts to connect outside of school opening hours, including early mornings, evenings, weekends and holidays. He connects to feel up-to-date with current information and to respond to incoming communication. At times this causes family tension.</p> <p>P2 at first was excited to be issued a school phone, now he is threatened by being anchored to a school-wide 24hr response expectation. Tied to his phone 24 hours a day, he believes that this open connection, mostly through email, causes him stress and he resents the professional expectation to be constantly communicating.</p> <p>P4 feels a sense of role responsibility related to working during holidays because he has been issued a school phone. He is conflicted between the tension he feels between eroding personal time and guilt for not checking in.</p> <p>P6 is exhausted and frustrated at the fact that he spends between 30 to 60 minutes first thing each day communicating. He feels enslaved by the constant communication of email.</p> <p>P6 is worried he is training himself to not to be focused. He gets anxious when he is not connected and struggles not to fall behind in his job. He associates constant communication as part of his role and devotes most of his time to it.</p> <p>P8 is overwhelmed by the demands of his role as principal. He is threatened and believes the connected environment, where he works and lives, is like the wild west without any norms. He wonders alone if the new connected landscape created new responsibilities that did not exist within the role ten years ago, or if he just cannot meet the demands of the role.</p> <p>P8 is vulnerable to distractions even when he knows he should be trying to avoid them. He is displeased when he attends to small tasks at the expense of maintaining focus needed to complete larger ones.</p> <p>P8 contemptuously is tied to his mobile phone 24 hours a day. He immediately attends to incoming messages from the time he wakes, and finds himself constantly chipping away at messages until he warily gets them down to a level at or close to zero. He question how to switch off when he sees others around him still connected.</p> <p>P11 believes that the cycle he is in, constantly clearing his inbox to have it fill up again, is unnervingly insane. He is frustratingly close to a saturation point and doubts that</p>

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organizations have the capacity to keep the volume of communication reasonable. He frustratingly believes because of the volume, lack of time and expectation for an unreasonable quick response being connected is like wearing digital handcuffs.

P12 is concerned that response time is a direct reflection on his reputation as a competent administrator. He is frustrated and exhausted from constantly adjusting his schedule down to the minute towards urgent incoming communication. He believes rapid communication causes him stress and anxiety.

P12 receives around 200 emails a day in addition to messages in other forms from other administrators. He hates having to constantly adjust his schedule to find time to answer them which leaves other work unfinished. He is always responsibly connected and feels that there is an expectation to be always connected in his role.

P13 finds it stressful when he connects to work at home. He struggles sometimes to consume what he is interested in opposed to the work he needs to do.

P14 admits she struggles on a personal and professional level not to be overwhelmed by tidal waves of information. She doubts her level of success currently and believes she needs better strategies to stay focused until tasks are finished.

P14 regretfully acknowledges that when she makes a choice to check email at the end of the day it sometimes increases her stress more than if she were to have left the message unread until the morning.

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These descriptive expressions highlight the psychological context in which the phenomenon was experienced synthesized as statement 2 in Table 7.

Some participants did not give themselves permission to prioritize their own time, they confronted work-life demands by intertwining and combining work and family. They constantly struggled to respond to incoming communication in order to do their job. They believed it was within the **professional responsibility of the principal to always be available**. They let their connected environment, mostly through email; tell them what to focus on. Their **attention was divided** and they were at times psychologically, cognitively and or physically depleted.

**Tied to the phone 24 hours a day**, participants constantly struggled to keep up with incoming messages. Participants viewed the **professional expectations of their role as an anchor, enslavement, and like wearing digital handcuffs**. Tension between eroding personal time and guilt for not checking in was experienced alongside negative feelings associated with how they must meet the demands of their leadership role. **Threatened, disoriented, and vulnerable, participants were frustratingly saturated** by the volume of communication across several different digital platforms associated with being a leader.

Such immutable association between professional responsibilities and constant connectivity created the context for erosion on work-life balance and personal relationships. Connecting to the demands of the role outside of school hours **caused family tension and exhaustion. Constantly adjusting, and readjusting schedules**, to attend to urgent incoming communication, participants attention and time was divided into small increments. Being responsible for keeping up with their **unruly** email inboxes was like the **wild west of connectivity with no norms, and produces** physically, mentally, and emotionally, strains upon participants.

*Textual Description 2: Stress.* Uniquely tied to the structure of role responsibility and worth recognizing as an individual aspect of the phenomenon was the aspect of stress. Emerging from the level four analysis, there was evidence of stress linked to pivotal and meaningful statements expressed by participants. This phenomenon of stress was particularly related to role responsibility. Data informing the identification of stress was previously presented within Table 7.

Participants viewed connectivity and **the pressure to respond to incoming messages as a contributor to increased stress**. Participants found interruptions stressful and express mental and physical symptoms associated with stress such as lack of sleep, emotions of **feeling out of control, struggling to switch off**, and a lack of concentration. There was

evidence of stress associated with participants' attempts to unplug. By constantly negotiating boundaries, participants were stressfully managing their work and life domains simultaneously.

***Psychological Structure 3: Skill.*** Table 8 provides individual transformed meaning units from the level four analysis used to form the third shared descriptive statement: Skill. These aspects reveal participants' awareness of skills, including specific tool usage, offline communication, and timing of online communication associated with connectivity.

Table 8

*Synthesis of skill related shared descriptive expressions statement three*

Shared statement	Individual descriptive expressions
Some participants control how they spend their connected time purposefully. They make conscious choices related to their priorities about what and how they connect. They astutely and confidently manipulate their connectivity by purposefully choosing specific tools and or settings to control their attention.	<p>P1 feels a sense of pride, control, and accomplishment associated with how he manages the volume of communication he encounters as a principal. P1 believes he is digitally literate. He takes pride in his disciplined approach to managing incoming and outgoing information efficiently. He uses a separate device to connect outside of normal working hours for personal communication.</p> <p>P2 is frustrated by much of the email he receives. He believes it distracts him from his "real" work as a principal. He actively struggles to defend time for his leadership work with faculty and students by trying to leave email until the end of the day.</p> <p>P2 asks faculty to not send emails that are time sensitive during the day. He has conditioned them to come and find himself or each other to avoid eroding relationships.</p> <p>P2 acknowledges the potential to be distracted from a task when so much communication is coming in. He controls the flow of communication by closing down specific programs and alert settings. P2 feels his own professional learning is enhanced through connectivity and builds it into part of his wake up routine. He appreciates being able to leverage a variety of tools and networks around various topics of interest related to school leadership anytime from anywhere. When he connects in this way it is on a separate account and on a different device. He feels this decreases the threat of being distracted by work related communication.</p> <p>P3 confidently uses tools and methods to communicate with members of the community she leads. She chooses specific tools for specific reasons, such as delegating tasks associated with what she is leading.</p> <p>P3 distributes decision making in transparent ways with departments by having them choose their summer reading and why it ties back to divisional goals on an open Google doc. She believes it is important to use a platform that is transparent to bring those departments that are a bit behind up to speed.</p> <p>P3 acknowledges her Apple watch easily redirects her attention towards the messages that are coming in instead of the content of the meeting.</p>

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She is sensitive to the fact that she can control this type of distraction and plans to adjust the settings before her next meeting.

P3 thinks managing the timing of communication when working across time zones related to hiring decisions is difficult.

P4 knows it is tempting and easy to hide behind email. He is confident when he communicates hard messages face to face that his communication is better received and faculty respect his courage to present information directly.

P5 acknowledges his connectivity makes him more vulnerable to distraction, but he is empowered to make choices that lead to him being in control over what he focuses his attention towards thereby distinguishing between what is flexible and urgent.

P5 is transparent about the need to talk face to face during the school day to maintain relationships, even though he thinks it is hard to connect with teachers. When he purposefully receives messages from others down the hall “he replies come down when you have time and let’s talk.”

P5 uses Skype to share interviewing responsibility with teacher leaders. He thinks using this technology slows down and distributes hiring decisions in powerful ways.

P9 just keeps learning and adopting new connective tools when she has to. Like how to turn a survey on and off automatically. She confidently does not believe connectivity affects her focus if she uses the right tool in a purposeful way.

P9 differentiates between urgent and flexible tasks associated with incoming communication and focuses effort accordingly allowing herself time for those that are more complex. She uses technology to be efficient and because she has no choice now that all information systems are digital.

P9 likes the transparency and collaboration of Google docs that her faculty can edit and is comfortable crowdsourcing work. She believes it helps her community build understanding around the big picture.

P10 confidently believes everything now is done online. He thinks he does not stress out over connectivity because he compartmentalizes and does not let his time erode.

P10 is satisfied he could be away from school at a conference and connected through Whatsapp back at school to help his assistant principal solve an issue. He believes having a separate channel, other than email, allowed them to connect without being sucked back into other matters.

P11 tremendously values being connected to informed sources via social media during situations that are out of the school's control. He strongly believes these connections support school credibility and are essential for a school in the area of the world where he is located.

P12 uses a dedicated admin only messaging group which he believes helps them stay on top of urgent schoolwide information.

P12 particularly likes when he can use technology to automate social media posts, freeing up time for other things while still communicating to specific audiences in specific ways.

P13 enjoys connecting each day. He starts and ends his day connected. He uses inbox zero to guide his workflow and communicates with other methods such as face-to-face or social media when he can because he believes it's more efficient or effective.

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P13 accesses and filters information with list serves and hashtags to grow and engage with others in his professional network online. He knows that where and how he does this is constantly shifting requiring the need to stay connected.

P13 confidently thinks a certain level of discipline and understanding is needed to know when to email and when to connect face to face. He has learned through experience the pros and cons of each.

P14 cautiously makes deliberate choices to prevent distractions associated perceived urgent tasks. She connects to only what he needs to be attending to when online and is not worried about delaying communication by not responding instantly.

P14 clearly does not want to be a slave to technology. She is protectively disciplined about her use and does not believe she needs it all the time. She has turned off email notifications, pushed messages, and tries to not check her email too often. She confidently believes that communication through email is not urgent nor always the best mode.

P15 connects to a project management platform to delegate to do's. He associates using certain tools with freeing up his time previously devoted to repetitive and non-essential tasks.

P15 uses Google Hangouts to conduct and record potential new hire interviews. He involves teacher leaders in the process and values breaking free from previous pressure to make decisions in isolation.

P15 thinks about what he is trying to accomplish and believes tools are not an answer in and of themselves.

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These descriptive expressions display the psychological context in which the phenomenon was experienced synthesized as statement 3 in Table 8.

Participants skillfully connected to get important work done. Leveraging and shaping connectivity allowed them to compartmentalize and be **connected to only what they need to be attending to**. They choose specific tools for specific needs such as **Google docs to crowdsource work** and **project management software to delegate tasks** enabling them to stay on top of communication. Participants broke free from repetitive tasks by embracing tools for automation like **posting to more than one social media platform at once**, or using add-ons to **limit or generate survey actions**.

Some participants did not treat all communication and connectivity equal. They **differentiated between urgent and flexible tasks associated with incoming communication** and focused their efforts accordingly. Having a clear overview of what can

creep into their day and **erode their time**, participants actively worked to eliminate and reduce specific types of interruptions and were clear about what requires their attention. The use of **admin only messaging groups** amongst principals and directors were used to channel certain communication to a separate platforms. Participants used the **do not disturb** function on their phones and **turned off notifications** to protect themselves from being distracted. They were tool agnostic in their problem solving approach. They used or eliminated tools based on what they were trying to accomplish and understand tools were not an answer in and of themselves.

Participants also purposefully **connected to professional learning networks and resources**, and personal areas of interest online **around various topics of interest related to school leadership anytime from anywhere**. They knew that how and where to make connections was a constantly shifting concept essential to stay well informed. Participants **leveraged a variety of tools and networks with purpose, accessing list serves, hashtags, and online groups**. Some participants had **separate work and personal accounts**, or used **a different device**, allowing them to connect to professional learning networks and resources, and personal areas of interest online without threat of attending to role related matters. Having such access was associated with helping them **do a better job by connecting to expertise and information**.

*Textual Description 3: Connecting offline.* Uniquely tied to the structure of skill was the aspect of connecting offline. This is worth recognizing as an individual aspect of the phenomenon. Emerging from the level four analysis, the presentation of connecting offline was strongly linked to pivotal and meaningful statements expressed by participants and is particularly related to skillfully managing connectivity. Data informing the identification of connecting offline was presented previously within Table 8.

Communicating face to face was shared by participants as what they do in order to establish, maintain, and repair relationships. Participants took time to **purposefully respond to emails or instant messages in person**, and move online communication offline.

Participants **valued face to face time** and acknowledged that during the school day it is **not easy to connect face to face with teachers**. They understood that connecting with someone digitally was not a one for one replacement for connecting face to face. Some participants knew when to connect face to face to repair relationships and made proactive choices around when to take conversations offline to protect relationships from being too mediated.

*Textual Description 4: Timing of Online Communication.* Uniquely tied to the structure of skill was the aspect of timing associated with online communication and worth recognizing as an individual aspect of the phenomenon. Emerging from the level three analysis, the presentation of timing of online communication was strongly linked to pivotal and meaningful statements expressed by participants particularly related to skillfully managing connectivity and to some extent control. Data informing the identification of timing of online communication was previously presented within Table 8 and Table 6.

Related to teacher recruitment, participants leveraged VOIP (Skype, Google Hangouts) technology to expand and **slow down the hiring process**. Participants described **distributing interview responsibility to teacher leaders**, and involving more individuals in the decision process. Participants recognized that working across several time zones at times related to hiring was a challenge and acknowledged the need to avoid ill-timed communication.

Some participants recognized timing of consuming and sending online communication was an essential element of managing work-life domains. They understood the demands online communication can place on time and space, and thought there was a need to protect against being **distracted from the real work** in schools. Some participants

do not communicate via email during the school day, and **asked individuals to not send urgent emails during the day** either. Some specifically avoided sending messages on the weekends or late at night, and at times use the delay send function to schedule messages. By paying attention to the timing of online communication they helped segment work and life domains for others on the receiving end.

**Psychological Structure 4: Ownership.** Table 9 shows the individual transformed meaning units from the level three analysis used to form the fourth shared descriptive expression: Ownership. This statement reveals purposeful acts of leadership by participants within their connected communities.

Table 9

*Synthesis of ownership related shared descriptive expressions statement four*

Shared statement	Descriptive expressions
<p>Some participants shape cultural norms and expectations by purposefully modelling measured use and clearly communicate why they make the choices they do. This includes what and how they prioritize, with what and how they communicate. They actively discuss the pros and cons of connectivity with their school communities to empower all members to make good connected choices.</p>	<p>P2 is planning a parent session on family agreements for tech use at home. He has shared personal stories of how banning phones at the dinner table has helped his own family with parents at school.</p> <p>P3 actively models and educates those around her. She explicitly explains to her faculty why she has chosen certain tools for them to use in a faculty meeting where they are deciding specific actions within their departments. P3 feels it is important to model such methods to inspire others to do the same and ensure everyone is engaged with technology.</p> <p>P3 feels confident that it is her responsibility as a school leader to help others increase their ability to use connected technology effectively. She is comfortable in this role, and believes expertise coming from herself or her own school community is the best option for helping others effectively use technology.</p> <p>P5 is empowered to inspire and model face to face communication during the school day. He has a commitment towards advocating for individuals to connect face-to face during the school day instead of digitally communicating.</p> <p>P7 is encouraged and empowered to access and share intellectually stimulating information. She believes, as a school leader, it is a valuable use of her time to facilitate connections.</p> <p>P7 feels compelled to actively live out the message she spreads at school regarding making good connected choices. She has initiated several workshops and book clubs to help the faculty and parent community develop strategies for connecting purposefully.</p> <p>P7 looks for ways to help herself and her faculty better understand when and how to use technology, but feels strongly about ensuring that they know it's ok to put the laptops away.</p> <p>P10 confidently and purposefully models both protecting individual connection by being disconnected in face to face situation, and leveraging connecting to information to build shared understanding outside of face to face time.</p> <p>P13 believes parents, some who are angry, need to be educated around appropriate use of technology. He is confidently using a parent book club around the topic of conversation in the digital age as a means to hopefully help them understand his perspective.</p> <p>P14 has worked with the faculty and communicated to the parents around not being on email during the weekend. She aims for a more measured and balanced approach to communication.</p> <p>P15 shares his approach to not checking email on the weekend with his faculty. He tries to inspire others to make the same choices by purposefully talking about his choices to connect with his family and spend time outside away from screens and how refreshed he feels on Monday morning.</p>

These descriptive expressions highlight the psychological context in which the phenomenon was experienced synthesized as statement 4 in Table 9.

Participants presented psychological structures that highlighted how they have ownership for their actions and their leadership associated with actions of others. They observe, reflect, and adjust how they shape connected experiences at their schools with others. These participants acknowledged the complex and at times challenging realities hyperconnectivity presented could be overcome.

*Textual Description 5: Collective inquiry.* Uniquely tied to the structure of ownership was the aspect of collective inquiry related to connectivity. Emerging from the level three analysis, the presentation of shaping collectivity inquiry was strongly linked to pivotal and meaningful statements expressed by participants, particularly related to ownership, for their leadership actions related to increased connectivity. Data informing the identification of collective inquiry was previously presented within Table 9.

Participants **felt it was their responsibility, as a school leader, to help others increase their ability to think about and effectively use connected technology.** They provided leadership that recognized challenging aspects of connectivity, and were solution oriented. Participants expressed facilitating networks for connection as a good use of their time, as they are **encouraged and empowered to access and share intellectually stimulating information.**

Participants **explicitly talked about their own use of technology with students, faculty, and parents.** Some participants had a **commitment towards advocating for individuals to connect face to face during the school day.** They **initiated conversations** and believed it was important to think through connected use as a community. Participants **led parent book clubs, information sessions, and workshops** and viewed parents as partners. They **led faculty professional development** and supported student inquiry related

to making good connected choices. Participants were empowered to initiate conversations around best practice with students, faculty, other administrators, and parents.

Leading by example, some Participants **modeled actively disconnecting and using tools appropriately**. These participants embraced learning from mistakes and trying novel ways of controlling and leveraging connectivity with the communities, they led. Some shaped measured and balanced use by creating norms around their approach to connectivity. These participants were redefining how, what, and when they led related to increased connectivity.

**Level Six: Abstract description.** The final level of analysis abstractly describes the essential features of the phenomenon-hyperconnected international school leadership, to present the vital facets of the participants' experience (Giorgi, 2009). This sixth level presents a composite description of the phenomenon by combining all textual and structural descriptions articulated separately in Level Five. During this level two main themes: (1) *leading with connectivity*, and (2) *being led by connectivity* emerged.

International school principals saw themselves as having the possibility to be always connected and attentive, even from afar, such as a beach on a remote island off of Sri Lanka or a cabin in the mountains of New Zealand, to their work as leaders. Large volumes and rapid speed of communication was a major facet of these leader's lives. At the intersect of the leader and connected technology was a world of paradoxes. These paradoxical complexities presented opportunities for leader reflection. Some participants confidently embraced their connected positions as they changed traditional ways of work within school systems. They did this by finding new ways to approach collective work and protect work-life balance. Contrary to those *leading with connectivity* were those *being led by connectivity* who found their leadership role a struggle in a hyperconnected environment.

Individuals being *led by connectivity* were caught on a treadmill of incoming and outgoing digital communication, much of which was transactional in nature. These school leaders recognized that this was eroding their personal health and ability to lead. This connectivity presented the possibility for endless work, much more than the participants admittedly could physically or cognitively manage. Such a burden eroded time for renewal, sustained focused work, and relationships. As a simple supply and demand problem, these leaders did not have the capacity to satisfy the demands of instant, around the clock, direct communication channels with hundreds or even thousands of potential school community members. They did not use systems and structures to distribute direct communication to appropriate places, and were acting as barriers creating a tight bottleneck for communication within the communities they led.

They found themselves alone late at night and early in the morning staring at their screens filled with messages. Non-work life was strained or almost nonexistent for some participants. They had little or no time for physical activity and rest. Even during school holidays, some participants felt they must connect to keep communication flowing through the bottleneck they had created for themselves. By contrast, some principals leveraged the distributed powers of connectivity to shape a culture of distributed leadership eliminating the bottleneck altogether.

Individuals *leading with connectivity* understood they must make enough interstitial space for the down time needed to be highly effective. They replenished both physically and mentally by protecting themselves from being overly saturated by connectivity. These principals developed their own way of attending to requests for connectivity that were sustainable and balanced. They shaped work-home transitions, availability to others for connected interaction, and manage interruptions. Calmly and confidently in control, these principals gave themselves permission to disconnect. They had time to think and learn about



digital modes of connectivity and develop appropriate skills to leverage them. By controlling when and how they connect, they found balance between work and home and do not associate connectivity with negative emotions or lack of wellbeing.

Understanding how transparency and distributed leadership could empower individuals within the communities they lead, some participants strategically and skillfully embraced connected technologies. They clearly knew what and how they would attend to their work based on specific school goals. Some participants strategically made choices towards leveraging tools to highlight, distribute, and or attend to instructional aspects of their roles as leaders. These individuals were transforming schools and their own leadership to leverage the best of what connected technology has to offer and minimizing the worst. They were changing traditional systems and structures to better support tight networks of learners who help each other do things differently.

### **Conclusion**

This chapter summarized findings from the phenomenological analysis. Through this analysis, the lived experiences and perceptions of international school middle and high principals were explored, how they make meaning of hyperconnectivity, the leadership opportunities and challenges, and the choices they think are essential to navigate increased connectivity both inside and outside of schooling. This study was conducted with fifteen participants: eight middle school, five high school, and two middle/high international school principals on four different continents representing thirteen different countries. The chapter began with an overview of the analysis process used for this study and data obtained from the interviews: including raw transcription data, delineation of meaning units, transformation of meaning units and shared descriptions emerging from combining participant experiences and perceptions. Common structural and textual elements surfaced during the five levels of analysis and create the foundation for the abstract description. This final level of analysis,

the abstract description, purposefully bridges the gap between data analysis and interpretations related to how the four structural and five textual elements interconnect with one another thereby informing the two main themes: (1) *leading with connectivity*, and (2) *being led by connectivity* further discussed in the next Chapter: Five.

## **Chapter Five: Conclusions, Implications, and Recommendations**

This study used a qualitative phenomenological methodology to analyze, describe, and present an understanding of leadership from the shared experiences of international school leaders in hyperconnected learning environments at the middle and high school levels. After collecting participants' stories during interviews, the transcripts were analyzed through a series of levels to decontextualize and recontextualize the data. This analysis strategy formed a description of the human side of technology associated with school leadership in environments where connectivity is a constant. By sharing the participants' experiences, future leaders, and those working to support them, will have the capacity to make more informed decisions related to hyperconnectivity. This study provides a heightened perspective on how school leaders must manage paradoxical layers of complexity in environments with constant connectivity.

This chapter delivers interpretive analysis of the primary findings for this study in relationship to the related literature discussed in Chapter Two, answers the research questions guiding this study, and provides implications for future research and current practice. Finally, interpretations and recommendations for future research and practice connect this study to tangible next steps.

This study's primary findings lie within two main themes: (1) *leading with connectivity*, and (2) *being led by connectivity*, that emerged from the connections between and amongst structural and textual elements supported by the data presented in Chapter Four. These divergent themes are the essence of what surfaced within the analysis that tie together the elicited meaning of participants when answering the main research question for this study

(How is hyperconnectivity experienced by international school leaders?), shown in Figure 4.

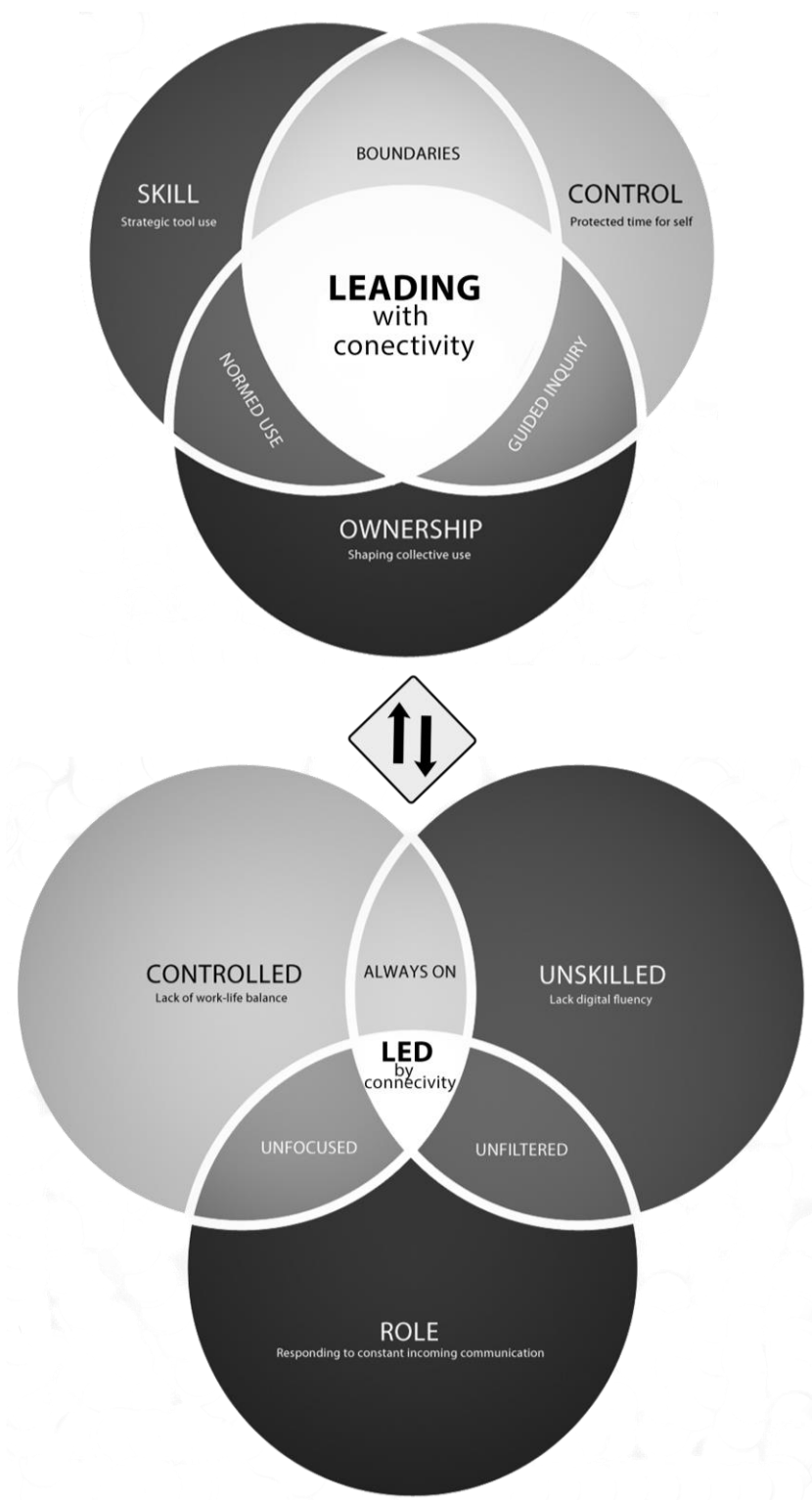


Figure 4 Divergent Themes

Divergence of the two themes is grounded in the psychological concept of absence and presence articulated in Chapter Four and shown previously in Table 5.

Participants that described effective leadership, given the possibility to be always connected, expressed strong consciousness and understanding associated with structural and textual elements that emerged from the data analysis. These elements indicated strong boundaries to protect time for reflection and renewal and constant practice of skills and strategies to influence collective technology use. These practices reinforce the dichotomous advice Rosen and Samuel (2015) offered. Psychologist Rosen recommended individuals should intentionally and systematically unplug from streams of information to refocus and reenergize. Samuel, a technologist, on the other hand, argued one should fight digital distractions with strategic tool use. Those that showcased Rosen and Samuel's recommendations displayed effective leadership as they purposefully leveraged technology to act as a catalyst to help shift learning for the communities they led.

Those on the other end of the continuum of effectiveness have confronted intertwined and combined work-life domains, and do not strongly shape their own boundaries. They have been controlled by non-stop work as they unconsciously are controlled by their constant connectivity. These individuals are overloaded, and in consequence, are potentially overloading others.

In the next sections, these two themes are synthesized with literature reviewed in Chapter Two and the answers to the research questions supported by the structural and textual data that emerged in Chapter Four.

### **Subquestions and Central Question Answered**

This phenomenological study was guided by the following central question: What are the hyperconnected experiences of international school leaders? The following six subquestions were designed to inform the central question answer:

1. What are the contexts of hyperconnected experiences?
2. What are leaders' perceptions about their hyperconnected experiences?
3. What are thoughts associated with hyperconnected experiences?
4. What impact does increased connectivity have on leader communication?
5. What impact does increased connectivity have on leader relationships?
6. What impact does increased connectivity have on leader decision making?

Interview questions were designed to help answer these subquestions. Data gathered during interviews were analyzed using the Descriptive Phenomenological method (Giorgi, 2009) guided by the six subquestions. A summary of the data associated with the six subquestions follows, informing how the central question was answered.

**What are the contexts of hyperconnected experiences?** All participants reported seeing themselves as having the possibility of being always connected. Central to each leader's context for being connected were the aspects of massive volume and the fast speed of information flow; Rushkoff (2013) described this context as time and space collapse. Zhao (2014) identified how rapid technological change significantly alters the core business of schools. The data in Chapter Four indicated that participants found themselves in the middle of this alteration with more paradoxical questions than answers related to their connected experiences. Associated with the participants' questions was what Hemp (2006) and later Shirky (2008) summarized as the removal of barriers associated with distributing information.

For some participants, having clear work-life boundaries allow them to manage their connectivity and feel in control. This element from participant descriptions relates to the first theme from the analysis: *leading with connectivity*. To these participants, having strong personal boundaries was their way of actively controlling the context of what Kelly (2010) described as the technium, "vibrating around us" (p. 10). Shirky (2010) described the control

individuals have over the flow of information when he stated, “it’s not information overload it’s filter failure” (5:45). Weinberger (2012) described this *filter failure* as a problem more than a solution if not managed purposefully. Additionally, as Hoerr (2011a) pointed out, leaders who manage massive amounts of information cannot make sufficient time for reflection in action; therefore they cannot appropriately respond to the demands of their roles as leaders.

Some participants shared ways they are controlling the flow of information to protect their ability to focus, such as using filters, turning off notifications, and using alerts to prompt a change in focus. Their behavior is consistent with what Levy (2008) identified as cognitive limits related to how much information one can realistically process. However, this compartmentalization is not what most individuals do (Case, 2010; Feenberg, 2010, Postman, 1993; Rushkoff, 2013 & Turkle, 2011). Other participants reported being always cognitively on, actively monitoring and using their connectivity to attend to their work, and thinking about the potential to do so. These individuals reported a non-stop, overloaded, universally connected context in which they live and work. Previous works highlighted similar invasive complexities associated with personal and professional use of connected devices (Butts et al., 2015; Cousins & Varshney, 2009; Derks et al., 2016; Stanko & Beckerman, 2015; Thomas, 2014; Turkle, 2011 & 2015).

**What are leaders’ perceptions about their hyperconnected experiences?** Kelly (2010), Rosen et al. (2012), Rushkoff (2013) and Turkle (2012) all recommended that we must reflect on, and better understand, specific facets of technological change. Yet Postman (1993) identified that the close examination of technology and its own consequences is not an inherent behavior. This examination was something some participants perceived to have value. While these participants described self-awareness as involving increased connectivity, and they also acknowledged the consequences related to their technology use. They reported

being aware that at times they needed to make space to reflect as well as a break from increasing work demands.

A strong divergence between those who perceived themselves as being in control of their connectivity and those that perceived connectivity as a constant unyielding mechanism by which they are controlled is evident. Perceptions shared by participants varied along a wide continuum from “*it’s like wearing digital handcuffs*” to “*it’s such a helpful game changer to be in such control.*” These opposing findings are similar to those who have previously studied leaders in business settings such as, Chesley (2014); Cousins and Varshney (2009), Derks et. al (2015 & 2016), Thomas (2014), and Wajcman and Rose (2011).

Some participants perceived the ability to always be connected as a source of stress. Participants attributed this increased stress to increasing interruptions at both work and home. This increasing demand and stress builds upon Devon’s (2010) argument that the top stressors for principals include failing to complete work and constant interruptions. Morgan (2014) also identified symptoms of increased, even excessive stress among principals: physical symptoms such as sleep problems, emotional symptoms such as feeling out of control, and behavioral problems such as struggles to switch off, and an inability to concentrate. These symptoms are consistent with how participants in this study felt stress. Hammerness et al., (2011) described individuals using technology in ways that have caused physical and mental illness, which reinforces the experiences expressed by some participants in this study.

Some participants reported feeling out of control. This lack of control was perceived by those participants that “*switch tasks constantly, never really truly finishing anything.*” Rushkoff (2013) described this as *present shock*, the anxious constant state presented as both our digital selves and physical analog bodies navigate a connected world where everything



happens now. This argument is consistent with Stone's (2008) concept of continuous partial attention, the mental state of many knowledge workers today, and Levy's (2006) stance that "there are natural neurological limits to our attentional capacity" ("More, Faster, Better," para. 3). Some of the participants in this study attested to lacking self-awareness in relation to their choices regarding connectivity.

**What are thoughts associated with hyperconnected experiences?** Thoughts, just like perceptions, could be categorized within the two divergent themes of this study. However, all participants reported thinking about connectivity as being potentially threatening to their ability to effectively lead their schools, to have successful relationships with others, and to maintain work-life balance. Some participants learned and adjusted strategies for compartmentalizing work, to control for and reduce potential threats to their life outside of work. These views are similar to those reported in the work of Cousins and Varshney (2009), and Thomas (2014) who found individuals in leadership roles outside education use work-life management strategies to control their mobile connectivity.

Some participants viewed themselves and others as having the capacity to successfully navigate and harness connectivity. These participants believe it is their role as principal to make appropriate choices for their community related to when, how, and to what they connect. This finding builds upon previous studies (Cousins & Varshney, 2009; Derks et al., 2016; Thomas, 2014; Stanko & Beckman, 2015; Weston & Bain, 2010) that described the use of technology as something to be managed: technology serves as a cognitive tool that enables transformation of time and space, but it blurs work-life domains.

Other participants viewed connectivity as an unyielding domain of their experiences that was eroding (a) their ability to do their job well, (b) their relationships at home, and (c) their personal wellbeing. They associate increased connectivity with increased work, but not necessarily increased effectiveness. Chesley (2014), pointed out "that the instantaneous

nature of technologically facilitated communication and information tasks may be changing social expectations about acceptable response times at work and elsewhere in ways that outstrips the new efficiencies of these innovations” (p. 605).

Some participants had extreme lack of hope and confidence related to their connected situations, such as one participant who reported, *“I’m at my breaking point with this f\*\*\*ing constant stream of email, and there is nothing I can do about it.”* Thoughts of this type were associated with the structure of role responsibility and unreasonable demands. These results build upon previous findings of Butts et al., (2015), Chesley (2014), Harris (2014), and Mazmanian et al., (2013) who also found increased stress associated with large amounts of digital communication.

Some participants believed it was within their professional responsibility to be always available to respond to incoming communication from the communities they led. One participant described this as being *“intellectually on call.”* This supports Middleton (2007) who found executives with blackberries were checking email at midnight and again in the morning before getting out of bed.

Participants associated this “always on” facet with an attempt to fulfill others’ perceptions of having led well. As described by one participant, *“if I don’t get back to them in 24 hours they might think I’m not doing my job well. It’s a school expectation we respond within 24 hours.”* Such descriptions were tied to feelings of inadequacy and beliefs of being able to personally respond in a timely manner, given the large volume of incoming communication was unsustainable. Barley et al., (2011), and Butts et al., (2015), found similar results associated with daily intrusions of email at home.

### **What impact does increased connectivity have on leader communication?**

Building upon the finding of Hines et al. (2008) when studying the impact of electronic communication on school principals, all participants in this study described dramatic changes

in their work because of digital communication. These changes were increased stress and anxiety, interruptions, pace, the need for new skills, and longer hours worked. This supports findings from Chesley (2014) who found workers experienced greater interruptions and a faster pace of work. Additionally Wells et al., (2011) found personal task management such as constant interruptions, and keeping up with email correspondence to be a stressor facing principals.

Some participants reported one hundred or more daily emails received as a routine quantity. Many shared experiences of returning to large amounts of new messages after working a few hours offline, leading them to feel stressed and anxious about the rate and volume of communication. This answers the question posed for future research by Hines et al. (2008), “Does electronic communication add to the stress and anxiety of principals?” (p. 289). The findings from this study indicate that some school principals associate constant connectivity with increased anxiety and/or stress. For example:

*That [connectivity] I think leads to a bit of a stress for me in particular, if I've got any unanswered e-mails or not answered, unread e-mails in my inbox, that raises my stress level. If I've got 25, my stress level is almost through the roof, because I'm anxious about the fact that I haven't actually been responsive to the faculty or sometimes to the parents who are contacting me. I don't want that to impact the way in which they view my ability to do my job. I find that to be actually quite a stress.*

All participants reported responding to email well outside of school operational hours. This is along similar lines of many previous studies in business environments which found access to email at home increased time spent on work related tasks (Butts et. al., 2015; Cousins & Varshney, 2009; Mazmanian et al., 2013; Middleton, 2007). Some participants reported working until after midnight to clear their inboxes only to find them filled up again to nearly one hundred by lunchtime the next day. Associated with the large volume of email

were thoughts and perceptions of overload. This supports the work of Barley et al. (2011) who found time spent on electronic communication served as a salient signal of stress and overload more than time spent on other work activities.

Attending to incoming communication was a common experience shared by participants, but not all described feeling overwhelmed or overloaded. Many expressed that they had reduced the quantity of their received messages by helping others to avoid misusing email. Such individuals shared experiences is consistent with what Postmann (1993), Christenson and Horn (2008), Shirkey (2008), Stanko and Beckman (2015), and Rushkoff (2011) advocated; the need to think through and reorganize the ways in which we work in new connected environments on an institutional level.

Some participants described creating digital communication norms. They associated these norms with shaping the use of technology to distribute work and foster transparent communication. This finding supports what Turkle (2015) outlined as intentional use of technology and leadership. Work of Stanko and Beckman (2015) identified the need for leaders to use multiple strategies to ensure that employees use technology reflectively

Colbert, Yee and George (2016) articulated the need “to fully understand how digital fluency may influence job performance” (p. 732). The results from this study show examples of digital fluency by identifying the skills and strategies used by participants to leverage connectivity. Participants created support structures that enabled faculty to draw just what they need from digital platforms that consolidate information. These structures included leveraging surveys, polls, twitter hashtags, and documents with open editing rights, some school leaders who participated in this study intentionally shaped areas where faculty can “*continue the conversation and sharing beyond PLC time.*” By shaping tools, design, and culture at their schools, these leaders have prevented and diverted large amounts of incoming electronic communication to some extent of success. These findings highlight some

participants in this study are overcoming the challenging element described by Schrum and Levin (2016): “learning how to effectively leverage appropriate technologies for communication as well as instructional and administrative purposes” (p. 18).

Wiseman and McKeown (2010) identified the need for drawing out and using available knowledge. Some participants reported strategies consistent with this need: they connected to sources in targeted ways, in timely sequences, by mining listserves or hashtags, and by structuring their faculty to communicate in a group working together toward shared values. These strategies are consistent with the argument of Senge et al. (2000): “if you want to improve a school system, look first to the way that people think and interact together” (p. 19).

Providing training experiences for faculty, students, and parents was something that some participants felt was a strong element needed to shape norms for collective appropriate use. Participants shared modeling innovative connected practices in line with the findings of Smith (2012), Levin and Shrum (2012), and Schrum and Levin (2016). The reviewed literature indicated school leaders must take responsibility for technology integration (Anderson & Dexter, 2005; Brockmeier et al., 2005, & Larson, 2010). Some participants expressed doing just that within their administrative domain with norms for collective use.

Gaining a specific level of expertise associated with use of connected technology by increasing their ability to personally use tools was a common shared experience for some participants. This is in line with previous finding (Brockmeier et al., 2005; Shrum et al.2011; & Smith 2012). This also supports leadership-oriented recommendations described in the U.S. Department of Education (2016) “National Education Technology Plan: Future Ready Learning” such as, “to realize fully the benefits of technology in our education system and provide authentic learning experiences, educators need to use technology effectively in their practice” (p. 1).

### **What impact does increased connectivity have on leader relationships?**

Participants reported interacting more with individuals in mediated ways than face-to-face, which further supports the findings of Wajcman and Rose (2011) who found the average knowledge worker has more mediated than face-to-face communication during the work day. All participants recognized the aspects of mediated communication highlighted by Turkle (2011) and Sherblom (2010) who reported increased complexity associated with lack of verbal cues and time/space displacement on relationships. Some participants highlighted, when communicating with parents, mediated communication presents potential relational strain associated with cultural differences. Many participants purposefully took communication offline to rebuild or protect relationships. These participants recognized through reflection that lack of time to meet face-to-face with teachers during the school day emerged as a facet adding to the complexity of communication present in schools. Some participants expressed frustration with the historical lack of time most school schedules present for teachers to meet face-to-face, which they believe was needed to maintain strong relationships. Participants acknowledged the need to break the cycle of mediated communication, and as Turkle (2015) noted, “lead a culture of conversation in the workplace” (p. 253). As one participant put it, *“I set that tone in the buildings and say at a faculty meeting explicitly, ‘Let’s go walk. You have a question about this? Come find me’.”*

Participants reported connectivity as impacting their non-work relationships in both positive and negative ways. They acknowledged the need to leverage their connectivity in both their personal and professional domains. Some participants reported their connectivity as being a source of tension at home with their families. Participants shared, *“it’s not always positive”* and, *“it’s a challenge to make sure that it doesn’t get in the way of relationships.”* All participants reported feeling more connected to families abroad by connecting frequently. Participants especially highlighted their joy related to easily connecting with their

grandchildren such as, “*Although we’re five hours apart we’ve set this time for 10 minutes. I speak to my little grandson, so that we have that connectivity. We couldn’t do that 10 years ago.*” This is in line with Turkle’s (2015) work associated with reclaiming conversation and using technology in ways that bring families together.

Participants also shared their feeling that connectivity contributes to maintaining and strengthening professional relationships with their counterparts in other countries. One participant described, “*the reality is that international [schools] almost by definition are a bit isolated. And so, if it wasn't for the hyperconnectivity, you'd feel super-isolated.*” Some participants shared similar feelings related to less isolation, reporting reflections such as, “*We could feel like an island if we weren't connected.*” These types of examples were often paired with examples of how participants collaborated with professional organizations like, “*I’ll Skype with [an organization] next week to talk about the [organization’s name] courses this summer. When we get back I’ll Skype with [consultant name] at [organization name] in Boston.*”

**What impact does increased connectivity have on leader decision making?** All participants reflected on the impact of connectivity on decision-making imbedded within their descriptions. Control was a predominant theme in their descriptions. Some participants described the act of deciding when and how to disconnect in order to control the flow of communication. These same participants made conscious choices to attend to their non-work life by controlling connectivity. In contrast, other participants expressed choosing to be constantly available for connection: “*I’m always available on my phone.*” These individuals made decisions to work well beyond school hours, yet they also expressed feeling conflicted about their choice to be easily within reach.

As with control, all participants made deliberate choices about the tools they use to connect. Participants described strategies for choosing the appropriate methods and tools

needed to complete work. Participants shared examples first approaching a problem to be solved agnostically and then supporting their solution with a specific tool. Some participants expressed that some types of shared decision making is now more efficient and transparent because of digital tools, such as tasking department heads with deciding and reporting back in an open Google doc. Conversely, some participants reported their concern for potentially rash decision making because of digital connectivity.

Some participants reported restructuring the way they recruit faculty members for open positions via VOIP (e.g. Skype) technologies as an example of using connected technology to slow the decision making process. They reported tremendous value in “*many people getting to know the candidates*” leading to better “*acceptance of hiring choices.*” By extending the connection time and scope, participants described a more distributed, transparent, and thorough process by which they made hiring decisions.

Viewing communication as something to be moved between online and offline (face-to-face) as a skill. Some participants shared how they made decisions to take communication offline. Their understanding of the transactional nature of most online communication grounded such decisions. Turkle (2015) described the transactional nature of email: “Emails pose questions and get answers - most of the time, emails boil down to an exchange of information” (p. 264).

Structuring collective inquiry for appropriate use and defining community ownership of learning requires leader decisions. As one participant shared, “*connecting responsibly and effectively is something I tried to get everyone to understand.*” Community learning includes parents, as this example indicated: “*We are constantly having to educate the parents, but it’s helping.*” Some participants distributed responsibility for making good connected choices within their communities by modeling and explicitly leading conversations. These school



leaders have empowered people to reflect on their connected choices and to engage in dialogue about this constantly evolving topic.

### **Central Question Answered From Analysis of Subquestions**

The results from the data analyses show that being hyperconnected presents school leaders with new challenges as well as opportunities. The data shows the leaders' relationships with technology and how they navigate the paradoxical complexities of ubiquitous connectivity. The humanistic exploration in this study looked beyond what connected technology does for school leaders as it provided insight into how using it impacts them as individuals (Turkle, 2005). It appears that the hyperconnected lived experiences of principals are shaped in dichotomous ways. Some described their experience as overloaded by a constant stream of reactive interactions, while others shared strategies and experiences of successfully embracing hyperconnectivity because it afforded transformational opportunities.

Ana Paula Borges (2013), Cousins and Varshney (2009), Derks and Bakker (2014), Jarvenpaa and Lang (2005), Mazanian et al., (2013), and Wajcman and Rose (2011) found similar dichotomous results as those found in this study when conducting studies focused on the business community. Participants in this study expressed similar ambiguous paradoxes (continuity vs. asynchronicity, and autonomy vs. addition), described by Ana Paula Borges. Hines et al. (2008) found similar paradoxes among high school principals' perceptions, varying between enhancing a sense of community through digital communication, to degrading interactions between community members through ineffective email use. This paradox is consistent with the findings in this study.

In this study, results show how principals associate tension with being connected, similar to Rosen et al. (2013), who also affirmed the tension connectivity creates when studying student usage in classroom settings. Similar to the findings of Derks et al. (2015 &

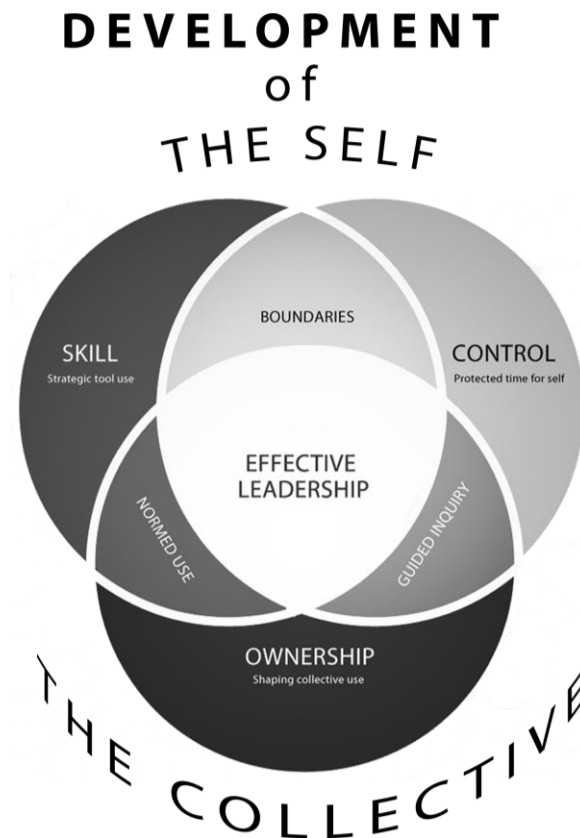
2016), this study found that the challenge of attending to incoming communication was a common experience shared by participants in this study, but not all described feeling overwhelmed or overloaded. Many previous studies (Ana Paula Borges, 2013; Thomas, 2014; & Middleton, 2007) identified leaders who block dysfunctional elements of connectivity by developing coping strategies. Participants in this study expressed coping strategies such as strong personal work-life boundaries and skillful use of connected technologies. These elements were presented in the data in Chapter Four with participant descriptions of transforming collective use within their communities.

The results suggest that some principals have embraced innovative ways of distributing the flow of communication, and they created decentralized networks, such as using Google docs with open editing access to facilitate collaboration amongst middle level leaders. Briggs and Makice (2012) referred to digital fluency as competence associated with using technology to achieve desired results. They assert that individuals need this fluency to appropriately organize digital communication. This is in line with Mayer-Guell's (2000) recommendation for principals to play a major role in shaping communication norms and in modeling appropriate use of electronic communication. Within hyperconnected environments, the number of connections between people builds exponentially (Kelly, 2012). Those that acknowledge and work to control these amplified consequences provide salient examples of the ways leadership needs to evolve by reorganizing many functions that traditionally have been conducted through a tight power structure.

Individuals in this study shared experiences akin to what Christenson and Horn (2008), Postman (1993), Rushkoff (2011), and Shirky (2008), advocated for: the need to think through and reorganize the ways in which we work in hyperconnected environments at an institutional level. In their descriptions, some participants leveraged electronic communication as they distribute work and embrace connectivity to help them lead by

carefully managing how and when they use electronic communication. These individuals have also strategically prevented information overload by delegating information flow within their schools. By shaping culture and norms effectively, they delegate large amounts of electronic communication from their immediate responsibility. By working proactively with how the whole institution manages connectivity, these participants described rethinking similar to what Fullan (2012) recommended, “let’s rethink how technology can be used at our service as well as push us to do even more” (p. 13).

The findings from this study provide needed additions to the educational leadership literature. Similar to the dichotomous advice of Rosen and Samuel (2015) participants in this study showed elements of effective leadership by systematically and intentionally turning away from information technology, by establishing strong personal boundaries, and by skillfully connecting themselves and the institutions they lead. Their ability to unplug paradoxically allowed them to effectively approach connected technology within their leadership practice, this development of self and community is shown in Figure 5.



*Figure 5* Effective Hyperconnected Leadership

### **Implications**

This study directly addressed the impact of increased connectivity on international school leaders. However, this study only serves as a first step towards operational awareness with hyperconnectivity. The paradoxical complexities presented along with the evolving nature of constant connectivity for both school leaders and those working to support them needs further study. Several implications emerged from the findings of this study for the discipline, practitioners, and future studies.

**Implications for the Discipline.** According to Fullan (2012), “Only those that know how to learn, who can relate to others and the environment (including “*things*”), and who make the world part of their own evolving being will thrive in this world” (p. 3). The leaders in this study must control a hyperconnected context wherein the number of devices

outnumbers people. This study's findings show examples of those who know how to learn and apply their learning in ways that transform their leadership. These individuals are capitalizing on the powerful forces inherent to hyperconnected environments. This acknowledgement of technology's ability to reshape our lives and schooling environments, and the ownership one must take of adapting digital practices, are both needed to effectively lead educational environments focused on people and values.

Conversely, this study's findings showed examples of the disadvantages, risks, and repercussions of adding technology while using outdated leadership practices. These individuals are putting themselves and others at risk, as they are controlled by their own connectivity. By replacing face-to-face interactions with digital communication, they are creating work environments that foster dehumanizing elements absent of the common objectives and values needed for individuals to thrive (Rose & Schwab, 2015).

**Implications for Practitioners.** This study presented shared experiences of international middle and high school principals that showed how they have lived, learned, and led within our hyperconnected world. With such experiences, descriptions of physical, mental, and emotional strain related to working in hyperconnected school environments illuminates a point of caution for those embarking on one-to-one computing initiatives in particular, as well as for all those aiming to be *future ready* by increasing connectivity within schools.

This study found that some participants expressed strong self-awareness associated with their use of technology. These individuals have developed strong personal boundaries allowing them to unplug and find the solitude needed for reflection upon their technology usage. This time for reflection is needed to create systems and structures that work with technology (Cain, 2013). Permission to put themselves first emerged as a strong factor that

influences principals' approaches to reflection, renewal, and skill development. Examples of knowledge, skills, and dispositions needed to do such work have been shown in this study.

Leadership of self is a central recommendation from this study. Leaders who define personal boundaries maintain control with connectivity; they develop the needed agility and adapt to the changing demands of connectivity to be *future ready*. These strategies can help leaders to fulfill their primary responsibility, which is learning. As Fullan (2012) recommended "work with machines" (p. 12) and "define the learning game as racing with technology" (p. 16).

### **Recommendations**

The findings from this study present potential retrospective lessons for practitioners and future research. From the data collected and analyzed, the effective school leaders in hyperconnected contexts have worked with technology, not against or without it, to shape the future of education in ways that maximize the best and minimize the worst of what technology has to offer.

**Recommendations for Practitioners.** Those leading schools must pay attention to how connectivity is affecting themselves and members of their school communities. Principals must protect themselves from the increasing demands upon their attention that constant connectivity presents in order to make mental room for the self-reflection and creativity needed to provide novel solutions and approaches towards their leadership work. The findings from this study support the following four recommendations for current practitioners.

- Personal boundaries must be formed on the part of the leader to protect time and space for development of self.
- Leaders must unplug to find the solitude needed to reflect on their use of technology.

- Leaders must develop skills and dispositions needed to “use technology effectively in their practice” (U.S. Department of Education, 2016).
- Leaders must shape collective use and inquiry needed to institutionalize the use of technology for learning in sustainable ways.

School leaders must start disconnecting and distributing communication in sustainable ways within their organizations. The results from this study reinforce existing recommendations for organizations to control flow and in some cases to restrict email use (Mark et al., 2012). Digital work that is transparent and distributed puts leaders in a position to lead others, many of whom need help understanding systems and structures (such help often extends beyond merely giving access to digital tools) to purposefully leverage constant connectivity. By modeling and structuring balanced, appropriate use of connected technology, leaders can take steps toward protecting the health and the future of the school communities they lead.

**Recommendations for Future Research.** The findings from this study fill some of the gaps previously identified in the research literature related to educational leadership associated with connected technology. It confirms that paradoxical and invasive aspects associated with connectivity found in business and clinical leadership settings are present for school leaders as well.

Descriptions of the lived experiences of hyperconnected international school principals were shared in this study. Given rapid technology adoption in state systems (ETIN, 2015), focusing on school principals leading in context outside international schools is a logical next step. Additionally, controlling for age, gender, years of service, and school demographics such as size, socio-economic makeup, and geographic location would further provide potential insights about contextual factors associated with the digitization of schooling environments and leadership.

The data from this study showed school leader's personal boundaries and skillful use of specific tools to control connectivity. This raises new questions about contextual factors of how and when these individuals learn and evolve such skills needed to maintain control and effectiveness. Future studies should examine leader reflection and skill development to help illuminate the context by which leaders make space for their own development of self. These studies should be designed to answer compelling questions such as: how and when do leaders find solitude in our increasingly connected world; how do leaders best develop skills needed to manage highly distributed communication structures; and how do preparation and development programs effectively help leaders build their abilities of self-leadership related to increased connectivity?

Questions were raised about the ever-increasing demands (Goleman & Senge, 2014) placed upon school principals and whether this system is sustainable. Similar to other research, the findings from this study demonstrate that connectivity adds a layer of complexity associated with the role of school principal. Cain (2013) stressed many of the solutions for technology overload are emotional and psychological, not technical. Self-awareness on the part of the leader has emerged as a major finding within this study associated with effective hyperconnected leadership. Further inquiry into leaders' development of self-awareness related to their use of technology is needed to better understand and evaluate how to best increase leader consciousness. Rapid adoption of mindfulness in the business sector is emerging as an effective tool for leaders to make the space needed to respond appropriately in complex situation, if practiced regularly (Reitz & Chaskalson, 2016). Future research on mindfulness in educational settings related to leadership could start by asking: Do educational leaders practice mindfulness? If so, how do they make time for their practice?



Fullan (2012) pointed out the diversion of factors and forces away from core priorities within education reform. As the findings from this study illuminate, constant connection has the potential to accelerate collective action focused on core priorities or paralyze an individual's ability to focus like never before. Findings from this study identify some of the skills and strategies principals use to work with technology that they find helpful for themselves and the communities they lead. Other research indicated the importance of relevant student centered pedagogy to support relevant places of learning in today's highly connected world (Darling-Hammond et al., 2015). Further unpacking the relationship between student achievement and leader development of self is needed to illuminate how best individuals can sustainably support increasingly digitized learning environments that maximizing learning.

### **Conclusion**

The experiences of hyperconnected international school principals' were analyzed, described, and presented in this study. The findings from this study illuminate insights into the inescapable, paradoxical, and complex relationship with technology these leaders faced. Examples of leaders effectively working with technology were shared. Many of these specific examples may already be familiar; however, these examples provide a much more comprehensive perspective on hyperconnectivity as leaders balance social media use, or mobile connectivity with the realities of overload, finite time, and the lack of work-life balance.

Until this point, few studies have examined stories of school leaders within hyperconnected environments in order to understand the myriad ways connectivity can control, and in some cases, paralyze leaders. Stories in this study describe the dysfunctional side of hyperconnected leadership; a context in which leaders must meet so many demands that they are no longer effective nor healthy. The findings from this study indicate that some

leaders lack personal boundaries to protect the time and space needed for reflection, renewal, and skill development. These elements are not new within leadership literature (Brennan, 2013; Cohen, 2014; Covey, 1998; Palmer, 2007). With increased connectivity, leaders must also amplify strategies for self-development (reflections, renewal, skill development) as previous interstitial spaces that once informally provided this time are increasingly becoming compressed to entirely full.

Leaders and those that support them must change their ways of thinking in a true postmodern sense. They must face the reality that technology magnifies and transforms aspects of leadership development like never before. First, leaders must understand their relationship with technology to best understand themselves. Educational leaders are on the front lines of school evolution related to technology. Second, they must grasp the opportunity and power associated with technological change to shape and direct it toward a future that reflects and focuses common objectives and values of learning within the communities they lead (Fullan, 2012).

Descriptions of lived hyperconnected experiences show strategies that leaders are effectively implementing within the findings in this study. These findings offer four recommendations for leaders. First, personal boundaries must be formed on the part of the leader to protect time and space for development of self. Second, leaders must unplug to find the solitude needed to reflect on their use of technology. Third, leaders must develop skills and dispositions needed to “use technology effectively in their practice” (U.S. Department of Education, 2016). Finally, leaders must shape collective use and inquiry needed to institutionalize using technology for learning in sustainable ways.

For schools to efficiently evolve, leadership must be learning oriented (Hattie, 2009). Learning oriented leadership has not evolved at the pace of technology (Fullan, 2012). We exist on the edge of the technological revolution that is fundamentally changing the ways we

relate to others (Turkle, 2015), to work (Rushkoff, 2013), and to ourselves in general (Palmer, 2007). The scale and scope of this transformation presents complexities. According to Rose and Schwab (2015), “We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all stakeholders of the global polity, for the public and private sectors to academia and civil society” (p. 3).

Those shouldering leadership in schools must strive for the self-realization associated with this technological revolution by leaning into the paradoxical complex aspects it presents. A logical first step is for school leaders to understand personal experiences with technology, and how some are deploying resources, including their own limited cognition, effectively.

To lead learning communities that prepare students to thrive in society, students who are ubiquitously connected to machines and each other on a global level, school leaders must understand their own relationships with technology. To do this, school leaders must prioritize their time and skill development in order to have the agency required to shape relevant places of learning. Development of self, through examination of one’s use of technology, is the starting point toward the much needed sustainable and credible work of leaders within schools today.

The ultimate paradox of hyperconnected leadership is whether individuals will *lead with* or be *led* by their hyperconnectivity. The same technologies that fragment leaders’ attention and dilute their effectiveness are making their attention more valuable. Those *leading with* are embracing their connected situations, and the paradoxes it presents, to change the ways they are learning, living, and leading. They are effectively changing traditional systems and structures to better support themselves and others to do things differently by adapting *with* connected technology. On the contrary are those *led by* connectivity who are struggling within their connected situations in a self-perpetuating spiral away from effectiveness. Such a position is fueled by the paradox of acting itself without the

perspective needed to do things differently. Such a lack of discernment displaces themselves from a position to control their focus. The question of whether one *leads with* or is *led by* connectivity is at the heart of the connected reality for leaders.

The hyperconnected experience of the international school principal is full of paradoxical potential, and harsh realities much like life in the “tragic gap” as described by Palmer (2004). To Palmer this gap “between the difficult realities of life and what we know to be possible” (Palmer, 2004, 01:20) is the place where leadership is most needed. Descriptions from this study have been shared that show both difficult realities and hopeful possibilities. The effective hyperconnected international school principal must have the capacity to hold the tension between these two paradoxical sides that exist in our increasingly digitized world. Grounded in one’s own examined relationship with technology, leaders can and will have the caring and creative capacity to be #futureready.

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## Appendix A: Research Participation Invitation Note

Participant's email address:

Subject line:

Dear (name):

My name is Elizabeth Wargo and I am a doctoral candidate in the Educational Leadership program at the University of Montana in Missoula, MT, USA. I have been working in international schools (Bangkok, Shanghai, and currently Zurich) for over ten years. For my dissertation I am conducting a qualitative study of international school principals leading in hyperconnected learning environments, titled, *Hyperconnected International School Leadership: Shared Experiences*.

According to Fredette, Marom, Steinert, Witters & Lucent, (2012), hyperconnectivity “refers to the myriad means of communication and interaction, but also to its impact to both personal and organizational behavior” driven by, “the exponential growth of mobile devices, big data, and social media” (p. 3). Similarly Turkle (2015) described connectivity by way of information technology as the ability to be connected anywhere, to anyone, anytime. By participating in this study you will think through and be able to share your experience as a hyperconnected international school leader. Your contributions to the study may assist leaders, leadership theorists, and leadership writers to have a deeper understanding of how hyperconnectivity impacts international school leadership.

I am proposing to conduct approximately one hour Skype interviews with principals at the middle and high school levels that are serving in international school settings with one-to-one computing initiatives that are at least five years old. If you choose to participate, an interview will be conducted at a time and date that is convenient for you between November 2015 and March 2016. The questions will focus on your experiences living, learning, and leading in our increasingly connected world.

Information from this study identifying the participants and their organizations will be held confidential at all times. All personally identifiable information will be modified or removed at the transcription stage. Digital audio recordings of interviews will be kept secure at all times and be permanently deleted at the conclusion of the study. There are two governing bodies to ensure this confidentiality: my doctoral dissertation committee and the Institutional Review Board of the University of Montana.

At the conclusion of the study I will provide you with a digital copy of my dissertation.

Attached is a letter of support for this study from Dr. William P. McCaw, Ed.D., Department of Educational Leadership and Chairman of my doctoral dissertation committee.

I would appreciate a timely response one way or the other from you by replying to this message within five business days. If I have not heard from you within five business days, I

will follow up with an e-mail to answer any questions you may have and to ask again about the possibility of conducting an interview with you.

Sincerely,

Elizabeth Wargo  
Doctoral Candidate, Educational Leadership  
University of Montana  
Missoula, MT  
USA  
[researcher's contact information]

**Appendix B: Letter of Support from Dr. William P. McCaw, Ed.D.**

(date)

Dear (name):

I am writing to you to offer my support for the study being proposed by Elizabeth Wargo, an Educational Leadership doctoral candidate at the University of Montana. Ms. Wargo's study, *Hyperconnected International School Leadership: Shared Experiences*, has potential to surface some new and important data about the importance of a leader's life and their leadership practice as it intersects with increased connectivity and thereby provide the school leadership profession with valuable information.

As chair of her dissertation committee, I assure you that the study will be conducted in accordance with the strictest guidelines for participant confidentiality and research rigor as dictated by the University of Montana's Institutional Review Board and Liz's dissertation committee.

I also realize that leaders are incredibly busy people and that affording anyone one hour for an interview is asking a significant consideration on your part, but I do hope you will give this study your participation. It is a worthwhile study and the results could be important in providing all of us a deeper appreciation for the challenges of leadership in today's increasingly digitized educational context. If you have any questions regarding this study, please feel free to contact me at [bill.mccaw@umontana.edu](mailto:bill.mccaw@umontana.edu).

Sincerely,

Dr. William P. McCaw, Ed.D.  
Professor  
Department of Educational Leadership  
University of Montana  
+1 406-243-05395

### Appendix C: Follow up Note to Potential Participants

Dear (Participant Name):

Since I have not heard from you regarding your participation in my proposed study, Hyperconnected International School Leadership: Shared Experiences, I am following up asking if you would be willing to participate. By participating in this study you will think through and be able to share your experience as a hyperconnected international school leader. Your contributions to the study may assist leaders, leadership theorists, and leadership writers to have a deeper understanding of how hyperconnectivity impacts international school leadership. I certainly am aware of the significance of asking for an hour of your time for the interview, but I hope you will consider participating.

I would appreciate a timely response one way or the other from you by replying to this message within five business days. If I have not heard from you within five days, I will follow up with one last e-mail to answer any questions you may have and to ask again about the possibility of conducting an interview with you.

Again, if you have any questions regarding the study, please feel free to contact either me or Dr. Bill McCaw, my dissertation chair at [bill.mccaw@umontana.edu](mailto:bill.mccaw@umontana.edu).

Thank you for your consideration.

Kind Regards,

Elizabeth Wargo  
Doctoral Candidate, Educational Leadership  
University of Montana  
Missoula, MT  
USA  
[researcher's contact information]

**Appendix D: Final Follow up Note to Potential Participants**

Dear (Participant Name):

Since I have not heard from you regarding your participation in my proposed study, Hyperconnected International School Leadership: Shared Experiences, I am following up asking if you would be willing to participate one last time. By participating in this study you will think through and be able to share your experience as a hyperconnected international school leader. Your contributions to the study may assist leaders, leadership theorists, and leadership writers to have a deeper understanding of how hyperconnectivity impacts international school leadership. I certainly am aware of the significance of asking for an hour of your time for the interview, but I hope you will consider participating.

If I do not hear a response from you within five business days, I will assume you have chosen not to participate.

Again, if you have any questions regarding the study, please feel free to contact either me or Dr. Bill McCaw, my dissertation chair at [bill.mccaw@umontana.edu](mailto:bill.mccaw@umontana.edu).

Thank you for your consideration.

Kind Regards,

Elizabeth Wargo  
Doctoral Candidate, Educational Leadership  
University of Montana  
Missoula, MT  
USA  
[researcher's contact information]

## **Appendix E: Consent Form**

### **PARTICIPANT INFORMATION AND CONSENT FORM**

**TITLE:** Hyperconnected International School Leadership: Share Experiences

**STUDY:**

A qualitative study to analyze, describe, and present a new understanding of leadership from the shared experiences of international school leaders in hyperconnected learning environments at the middle (grades 6-8) and high (grades 9-12) school levels to inform the understanding of how hyperconnectivity is affecting school leaders.

According to Fredette, Marom, Steinert, Witters & Lucent, (2012), hyperconnectivity “refers to the myriad means of communication and interaction, but also to its impact to both personal and organizational behavior” driven by, “the exponential growth of mobile devices, big data, and social media” (p. 3). Similarly Turkle (2015) describes connectivity by way of information technology as the ability to be connected anywhere, to anyone, anytime.



PRINCIPAL INVESTIGATOR  
Elizabeth Wargo, graduate student  
University of Montana  
Missoula, MT 59812  
USA  
[researcher's phone number]  
elizabeth.wargo@umontana.edu

FACULTY SUPERVISOR  
Dr. Bill McCaw  
University of Montana  
Missoula, MT 59812  
USA  
+1 406-243-5395  
[bill.mccaw@umontana.edu](mailto:bill.mccaw@umontana.edu)

### **Special Instructions to Participants**

This consent form and study may contain words that are new to you. If you read or hear any words that you are not familiar with, please ask the principal investigator (Elizabeth Wargo) to explain them to you.

### **Purpose**

- The purpose of this qualitative study is to analyze, describe, and present a new understanding of leadership from the shared experiences of international school leaders in hyperconnected learning environments at the middle and high school levels.
- You have been chosen for this study as you have experience and insight into hyperconnected international school leadership from the perspective of a leader of an accredited, one-to-one, international middle or high school.
- You are being asked to participate in a research study examining the lived experiences of hyperconnected international school leaders so school leaders and the communities they lead may be healthier and better equipped to positively impact student learning.

**Procedure**

- This interview will take about one hour and will be recorded. I will also be taking notes as you answer questions.
- You will be asked a variety of questions about hyperconnected leadership, including how you navigate your own relationship with technology, and the impact of being highly connected has on your role as an international school leader.
- The interview will take place at a mutually agreed upon time and date between November and March.
- After the interview, you may choose to provide the principal investigator (Elizabeth Wargo) with additional information, however it is not required.
- You will need to verbally acknowledge consent of the information included in this form in order to participate in this study at the beginning of the interview.

**Risk/Discomforts**

- Although no risks or discomforts are anticipated, answering the research questions may cause you to think of feelings that may make you sad, upset, or stressed. If this happens, you may stop the interview and take a break. The interview can proceed when you feel comfortable. If you wish to terminate the interview completely, you may do so with no negative consequences.
- Should you choose to end the interview, you will be asked if the principal investigator can use the information that you provided up to this point or if you wish to withdraw completely from the study and not allow the principal investigator to use your information.

**Benefits**

- There is no promise that you will receive any benefit from taking part in this study.
- Although you may not directly benefit from taking part in this study, your contributions may help all educational leaders as they attempt to improve their practice as hyperconnected leaders.
- Your contributions to the study may assist the increasingly digitized role of school leaders, particularly international middle and high school leaders.
- Your help with this study may help leaders, leadership theorists, and leadership writers have a deeper understanding of how hyperconnectivity impacts international school leadership.
- Participation may bring a deeper clarity to your understanding of your hyperconnected life and how it impacts your leadership practice.
- You will also receive a copy of the study once it is completed.

**Confidentiality**

- Your identity (first name, position and affiliated school) will be concealed using pseudonyms.
- There are conditions under which confidentiality may be breached. If you indicate wanting to harm yourself or someone else, the researcher will contact you and further

request your phone number be given to a member of the clinical faculty who may contact you.

- Only the researcher and dissertation chair will have access to files that connect your name or institution with the data. Your verbal consent included in the interview recording file will be securely kept separate from the data.
- The audio recording of the interview will be transcribed by the researcher or a professional hired transcriptionist. The recording will be deleted after the study has been approved. The transcriptionist will sign a statement guaranteeing confidentiality and be knowledgeable of the University of Montana's Institutional Review guidelines for participant protection.

### **Compensation for Inquiry**

- Although only minimal risks are foreseen in taking part in this study, the following liability statement is required on all University of Montana forms to inform and protect you.

In the event that you are injured as a result of this research, you should individually seek appropriate medical treatment. If the injury is caused by the negligence of The University or any of its employees, you may be entitled to reimbursement or compensation pursuant to the Comprehensive State Insurance Plan established by the Department of Admission under the authority of M.C.A. Title 2, Chapter 9. In the event of a claim for such injury further information may be obtained from The University's 114 Claims representative or University Legal Counsel. (Reviewed by University Legal Counsel, July, 6, 1993).

### **Voluntary Participation/Withdrawal**

- Your decision to take part in this research is entirely voluntary.
- You may refuse to take part or you may withdraw from the study at any time without penalty or loss of benefits to which you are normally entitled.
- You may choose not to answer any questions during the interview.

### **Questions**

- If you have any questions about the research now or in the future, you may contact Elizabeth Wargo at [elizabeth.wargo@umontana.edu](mailto:elizabeth.wargo@umontana.edu) or Dr. Bill McCaw, my dissertation chair, at [bill.mccaw@umontana.edu](mailto:bill.mccaw@umontana.edu).
- If you have questions about your rights as a research participation, you may contact the Chair of the IRB through The University of Montana Research Office at +1 406-243-6670.

**Participant's Statement of Consent**

I have read the above description of the research study. I have been informed of the risks and benefits involved, and all my questions have been satisfactorily answered. Furthermore, I have been assured that any future questions that I have will also be answered by the researcher. I voluntarily agree to take part in this study. I understand that I will verbally provide a statement of consent at the beginning of the interview.

Name of Participant: \_\_\_\_\_(obtained verbally)\_\_\_\_\_

Participant's Signature: \_\_\_\_\_(obtained verbally)\_\_\_\_\_

Participant's phone number: \_\_\_\_\_(obtained verbally)\_\_\_\_\_

Date: \_\_\_\_\_(obtained verbally)\_\_\_\_\_

**RELEASE FORM****Permission to use quotations**

The purpose of this form is to secure permission to use quotations from the interview conducted as part of a research study on lived experiences of hyperconnected school leaders so school leaders and the communities they lead can be healthier and better equipped to positively impact student learning conducted by Elizabeth Wargo. The undersigned (*participant of the study and originator or the quotation*) hereby grants permission for Elizabeth to utilize quotations by the undersigned to be reported in her research study.

Participant's Signature: \_\_\_\_\_(obtained verbally)\_\_\_\_\_Date:\_\_(obtained verbally)

## Appendix F: Interview Protocol

Interview Form: Hyperconnected International School Leadership: Shared Experiences

Date:

Time: (time zone)

Name:

Gender:

Institution:

Position:

Longevity:

Phone number:

- 1) Open Skype
- 2) Start call and recording simultaneously
- 3) Start backup recording
- 4) Greet participant and ask demographic information listed above
- 5) Opening Statements, Including Verbal Consent:
 

Thank you for agreeing to take time from your busy schedule to participation in this research study. There are a few things that I would like to make sure you understand before we get started.

  - I will be asking you some general questions and writing notes as we proceed. Our conversation will also be recorded.
  - If you hear any terms during the interview that you would like to have defined, please let me know.
  - There are no wrong answers to the questions that I will be asking you. What is important are your thoughts, feelings and experiences. The intent is to hear your thoughts, feelings and experiences, not to make judgments on your responses.
  - You may choose not to answer any particular question.
  - By responding yes, you will be verbally agreeing to the information, including, potential risks included in the consent form. Do you agree \_\_\_\_\_?
  - By responding yes, you will be verbally agreeing to allow for direct quotations to be used as outlined in the Permission to User Quotations Release section. Do you agree \_\_\_\_\_?

## 6) INTERVIEW QUESTIONS

For the purposes of this study hyperconnectivity is defined as: *\*Hyperconnectivity*. According to Fredette, Marom, Steinert, Witters, and Lucent (2012), hyperconnectivity “refers to the myriad means of communication and interaction, but also to its impact to both personal and organizational behavior” driven by, “the exponential growth of mobile devices, big data, and social media” (p. 3). Similarly Turkle (2015) describes connectivity by way of information technology as the ability to be connected anywhere, to anyone, anytime.

- 1.1 What does this (digitally connected) mean to you?
- 1.2 Explain how you are digitally connected as a school leader?
- 1.3 Describe your daily use of connected technology?
- 1.4 What routines do you have around being digitally connected?
- P1.5 Are you always connected?
  - P1.5.1 If not, why?
    - P1.5.1.2 How do you disconnect?
  - P1.5.2 If yes, why?
- 2.1 What is it like to be digitally connected?
- 2.2 How do you feel about your wellbeing related to increased connectivity?
- 2.3 How do you focus?
- 2.4 What are your sleep habits?
- 2.5 How do you feel about your stress level related to increased connectivity?
- 2.6 Please describe to me a specific instance where digital communication influenced your stress level?
  - 3.1 How does increased connectivity impact you as a leader?
  - P3.2 What would you like to change about being hyperconnected as a leader?
  - P3.3 What is there about being hyperconnected that you hope stays the way it is?
- 4.1 How do you digitally communicate?

P4.2 What are the benefits of digital communication you enjoy?

P4.3 Are there any challenges?

4.4 What specific instance stands out in your mind regarding digital communication with the school community you lead?

5.1 How does constant access to digital communication influence your relationships with others?

P5.2 What are the benefits?

P5.3 What are the challenges?

5.4 What specific instance stands out in your mind regarding digital communication influencing your relationships within the school community that you lead?

6. 1 How does constant access to digital communication effect your decision making?

6.2 How is your workflow of decision making affected?

P6.3 What are the benefits?

P6.4 What are the challenges?

\*Is there anything else you would like to offer?