MAKING SPACES FOR THE DEVELOPMENT OF AUTONOMY IN A BLENDED LEARNING ENVIRONMENT

by

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DEDICATION

Only now can I fully recognize the vast number of incredible individuals who sowed the ground and planted seeds of inspiration and motivation over the course of my life. I dedicate this dissertation first to the original gardener, my grandfather, Dr. Oliver H. Bown, who lived his life as an example of how the greatest intellect can manifest in kind and gentle leadership. I aim to continue on the path that he carved for our family. In that circle of encouragement, I also dedicate this to my mother and father, Theresa Bown and Michael Bown, who never wavered in their support; from the late-night therapy sessions, the generous offering of a quiet place to write, and their amazing ability to encourage me. Finally, I dedicate this dissertation to my wife, Julie Bown-Anderson, and my daughter, Josephine Bown-Anderson, who both provided an endless sea of joy and gave me precious family time to work on our common goals even when it was difficult. These two supportive humans inspire me daily to look at life through the lens of creativity, possibility, and joy.

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ABSTRACT

The process of designing a blended learning experience is complex, particularly if one of the purposes of the experience is to enhance learners' autonomy. Designing professional learning to emulate and model a commitment to autonomy is often overlooked in favor of a focus on student learning outcomes. In this qualitative research study, I used a post-intentional phenomenological approach to break open the experience of three technology design coaches who collaboratively designed and implemented a 2-year blended professional learning experience for roughly 150 PK-12 central Texas urban public school teachers. I used the equity-centered design thinking process as a flexible partner to focus the study on the interplay specifically between blended learning and autonomy as defined in self-determination theory. I used interviews, observations, and a focus group to generate insights into the experience of designing and implementing professional learning of this nature. Additionally, I used a self-reflexion journal as suggested by Vagle (2014).

A new conceptual framework for purposefully opening space for autonomy in a blended learning environment emerged as meaning was constructed through the technology design coaches' reflections before, during, and after the implementation of the learning experience. The practice of noticing and reflecting took on a new level of importance in both design and implementation, proving to be essential skills to nurture and explore. Moments in which noticing and reflecting instigated change were connected to the professional learning designers' perceptions of participant navigation of discomfort

and congruence. This experience influenced subsequent designs by imagining moments in which one of three tools would be most helpful to maneuver a blended learning process. Further research considerations include the exploration of developing supportive environments or support structures for professional learning practitioners to refine and develop their own craft before designing and implementing professional learning with teachers or other audiences.

I. INTRODUCTION

Design thinking has transformed the way I think about school. *Design thinking* is a term that has evolved over the years, moving primarily from a product development process to other broader applications, including organizational change, systems, and anything to which a redesign can be applied (Ortiz Guzman, 2017). The most commonly articulated design thinking process consists of five distinct phases of empathize, define, iterate, prototype, and test. In 2016, however, David Clifford of Stanford d.school introduced the two additional modes of notice and reflect into the design thinking process (Hasso Plattner Institute of Design at Stanford University, 2019). This became known as the equity-centered design thinking process because the additional modes of notice and reflect intentionally illuminate equity and inclusion throughout the process of design. My understanding of the process and application of design thinking continues to grow with each new experience, particularly through the use of *equity pauses*, a purposeful moment of reflection developed by equityXdesign (Ortiz Guzman, 2017).

Design Thinking as a Discipline

I can fully recall the moment I knew design thinking had the ability to transform the way I thought about ideas and led groups. I had been working for months with a team that was assembled to develop a new vision for digital technology use in our district. One late afternoon, the design team gathered together. Every surface in the room had become a canvas. Chart paper was barely visible as a base layer under a rainbow of sticky notes covered with ideas written in marker and pen. The windows had become makeshift whiteboards and the potent scent of Expo dry-erase markers lingered in the air. Twelve people were actively making sense of the ideas gathered over the past few weeks.

A normally plain and boring conference table was decorated with half-opened computers and piles of sticky notes were ready for the next batch of ideas.

In this moment, politics and the day-to-day hierarchy of positional power melted away and the ideas were leading the conversation. The process of reaching a decision and making a commitment to a path forward had come. The design thinking process had effectively generated the first prototype, and smiles spread across the faces in the room. This new idea burst forth from many days of challenging conversation. Hopeful anticipation abounded around how this newly constructed design would play out in the test phase. Claps of high-fives and genuine celebration punctuated the end of this meeting.

My experience with the design thinking process opened my eyes to what it looks, sounds, and feels like to collaborate with education professionals from every corner of the profession to not only suggest, but be inspired by, the possibility of change in public education. I found a renewed sense of purpose. I felt a deep sense of autonomy, competence, and relatedness and I was struck deeply by the idea that being in school could also be this inspiring. There was a time when I felt that way as a student, but it was harder to recall. Grappling with a difficult problem and persevering through should be commonplace in education. I was struck by how the conditions created in just a few weeks enabled me to not only connect more to my cause, but bring about joy during the process.

This experience so fundamentally shaped my thinking that the format of this dissertation is loosely organized using a traditional five-chapter format, but the use of phases reflects the unfolding and refolding of my experience weaving in and out of the

design thinking process. The phases are anchored chronologically as much as possible, and naturally follow the logical format of a dissertation at many points. For instance, the Literature Review became a key component of PHASE III: DEFINE as I thoroughly explored the landscape of the topic under investigation.

During PHASE I: NOTICE, I situate myself as researcher as an active participant and reflective partner in the design thinking process, and not separate from the study. In PHASE II: EMPATHIZE, I paint the picture of why this study has meaning to those in education who are grappling with blended learning. During PHASE III: DEFINE, I look to the myriad literature to find patterns and meaning connected to understanding more deeply the structure of autonomy and the challenges of designing for autonomy in blended learning environments. During PHASE IV: IDEATE, I use what I learned through the prior phases to inform how the study was structured. I iterate on the answers to the following guiding question: How might this research be designed to allow for an authentic and insightful journey to unfold? In PHASE V: PROTOTYPE, I activate the study by engaging participants with questions, conducting observations, and gathering and analyzing the data. During PHASE VI: TEST, I outline the findings during the prototype phase and synthesize what was learned for future prototypes.

Finally, the REFLECT phase is recursive throughout the study through the use of equity pauses (Ortiz Guzman, 2017). "Equity pauses are an attempt to slow down the design process and give designers a protocol or tool that might help them evaluate the work they have been engaging up to that point through the lens of equity" (Ortiz Guzman, 2017, p. 47). I examine my role and positionality as researcher between phases as I engage in my own discourse check. These equity pauses are important touchstones

to reconnect to and uncover my own biases and assumptions as a researcher and human in this human-centered process.

II. PHASE I: NOTICE

The notice phase of the design thinking process helps the designer develop an awareness of the self before moving into the traditional first phase of the design thinking process, which is to empathize with others. Noticing refers to intentionally beginning with an examination of who you are and what you bring to the context. Noticing is a way to center oneself, take stock of mental maps, and increase visibility into how who you are affects what you experience and understand (Clifford, 2017). It is in the notice phase that I situate myself in my context of education.

Beginning With Self-Awareness

I wandered around the classroom, running my hands over tiny glass beads held together with wires, blocks of every shape, and shelves with shells lining their fronts. I would often end up in a familiar corner of the room, surrounded by colored pencils and paper and a beam of sunlight on the table that shot in from the high glass window above. This was my Montessori classroom in Austin, Texas, in 1982. Someone had designed a place where I was encouraged to get lost in the things that compelled my interests each day. My mistakes were celebrations and my interactions with others were driven by my own inquiry or imaginative play.

This two-room log cabin anchored the beliefs I hold about autonomy and education and have carried throughout my career as a teacher and teacher educator. I learned at an early age that my choices were both valuable and valued. I was exceedingly fortunate to flourish in an environment that supported my exploration of the world. As I recall, teachers interacted with time in a wholly different way than they do now. They hung back and watched. They noticed what I was drawn to, what caused confusion or

frustration, and what ideas might need introduction. There was not a sense of urgency around moving on to the next topic. I would go on to discover that new paradigm when I entered fourth grade in public school. I grieved.

As a young teacher in the late 1990s, I was fortunate to work in a school where I was allowed to discover how my values and beliefs would manifest in my new role as teacher. I made many choices that drew from my personal experience and concept of school. I held on to my early experiences and tried to bring them forth in everything I did. I listened to feedback from my students and allowed it to influence how I evolved as a teacher. I saw how the use of digital technology was integral to my students' life experiences. We had access to a school environment that enabled us to explore an expanded world, including virtual places and digital interaction, in a way mine never had. At that time, I did not yet have the vocabulary of blended or personalized learning, but I understood that my own concept of my role as an educator was shifting.

In my first year, I was quickly oriented to the importance of fourth-grade students' writing scores. It was my first collision with the idea that scores were at least as important as the students themselves. Was I merely becoming a pawn in a game to outwit test scores? I did not like it, and my students detested the moments in which we stopped to pay homage to this artificial "record" of how they were doing. Quickly I became aware of the influence of standardized testing on my students' sense of self-worth, on the perceptions by my evaluators of my performance as a teacher, and on the celebration-worthiness of our aggregated success as a school and district. I saw extreme anxiety in the fourth-graders entering my class who told me at the beginning of the

school year how nervous they were about the state test that loomed months down the road.

I will never forget Maria appearing at the frame of my classroom door on the morning of the state test. The circles under her eyes were deeper and darker than they had been the day before. She was clinging to her mother's leg, and both her eyes and her mother's eyes were filled with tears. Maria was petrified about the prospect of not performing well, and her mother was exasperated, having had no success in calming her daughter before arriving at school. Regardless of my own stance on testing and my reassurance of what influenced Maria's real worth, the bigger social context had consumed her. There was a school celebration planned for stellar performance, after all.

I could not help but wonder what kinds of messages about school my students had internalized. How could my students fully experience the entire year of exploration I had designed for them when they assigned such deep value to their performance on one test, given on one day of the year? I wondered how this new age of high-stakes testing had contributed to the loss of the magic and curiosity I had felt so many years earlier. I worried about the basic psychological needs of my students as they navigated the institution of school.

When the term *personalization* was first introduced to me in an education and learning context, I grappled with the concept. To personalize learning felt like an impossibility. One can only truly personalize for oneself. How would a teacher personalize *for* a student? Since then, however, I have come to embrace this term as I deepened my understanding of autonomy. When I understood autonomy in terms of self-regulation, the ability to decide and endorse that decision, I began to see the connection.

To me, personalization means the act of intentionally designing experiences so learners have the opportunity to choose and influence their trajectory. This is a critical driver of my deeply held belief about the purpose of school.

Biesta (2015) stated educators should examine three potential purposes for school: qualification, socialization, and subjectification. "Qualification has to do with the transmission and acquisition of knowledge, skills and dispositions" (Biesta, 2015, p. 77). Socialization refers to more of the ways of being and doing associated with a specific society. This includes spoken and unspoken perceptions of normality and the reproduction of social structures that may or may not be equitable. Finally, subjectification domain refers to the development of the individual person, or how students come to exist as "subjects of initiative and responsibility, rather than as objects of the actions of others" (p. 77). Maria Montessori addressed these three purposes almost explicitly in her philosophy in 1907, noting that children are unique individuals who are learning to become contributing members of society through active engagement in social harmony during work and play (O'Donnell, 2013). Regardless of the chosen pedagogy, educational model, or digital technology integration approach, reflecting on one's stance regarding these three domains is central to the role of educator. For anyone in education, exploring how these map into our own motivation is revealing.

For me, exploring subjectification was like finding a breadcrumb trail into my core and a deeper understanding of autonomy. When I read Biesta's words about subjectification as the process of developing one's own initiative and responsibility, I thought, "this is it." What is it that inspires people to make decisions on their own, to burst forth with new ideas, or to "try on" different versions of oneself? Exploring these

questions led me to Deci and Ryan (2002), who grounded my vision for autonomy as a way to bring inspiration and joy front and center in school. As a director of technology integration in an urban public school system, I have committed myself to situating educational technology in service of the goals of increasing student autonomy, competence, and relatedness.

Equity pause #1. Both of my parents were educators—my mother a high school speech and theatre teacher, my father a high school English teacher. Their parents were also in education—my paternal grandfather had been a professor of psychology at the University of Texas at Austin, and my maternal grandmother was a longtime social studies teacher at the high school level. My childhood Montessori experience, and that of my two older brothers, was possible only through our parents' sheer determination and sacrifice to pay our tuition. Our privilege positioned us around others who could influence decisions about early education; we were also privileged to have the means to choose to prioritize schooling over other basic needs.

When I became a teacher, I taught in a predominantly White, upper-middle-class, suburban area outside the Dallas–Ft. Worth metroplex. Most schools in the district had students who scored highly on standardized tests and the schools were never close to being taken over by the state. Keeping these scores unwaveringly high was a clearly articulated goal, and my campus principal was supportive of my experimentation with teaching methods that differed from those of the teacher in the classroom next to mine. I have come to understand that the autonomy afforded me was not the experience of teachers in other districts who were forced to teach in lockstep with one another. Teacher autonomy in those districts was not a reality.

Simultaneously, I discovered the restrictions of a predominantly upper class, White, heteronormative, conservative education system when I was unexpectedly outed as a lesbian at the elementary school in which I worked. Suddenly, I understood what it felt like to be treated as less than a full human being, less inherently qualified, and less deserving of human decency. I learned that some of my students' parents believed I should not be allowed to teach children, and some of them actively ensured that their children would not cross my path. Some of my colleagues felt similarly.

I was 23 years old at the time. I made the decision not to discuss my personal life as I continued to hone my teaching craft, but I was acutely aware of how the school system was not designed to support everyone in the community. I personally saw and felt the pain of institutionalized discrimination. After 23 years of privileged ignorance, I was just waking up to the realities of the world and of my career.

III. PHASE II: EMPATHIZE

The empathize phase of the design thinking process is an intentional excursion into an empathic understanding of the problem to be solved. This involves examining the area of concern through observing and engaging and empathizing with the people for whom you are designing in order to better understand their experiences and motivations. It is during this phase that the designer learns about the problem and how it manifests (Dam & Siang, n.d.).

Unpacking the Term Technology

Increasingly, school leaders and teachers face an unavoidable choice about how they will engage with digital technology (or not). The first step in engaging with technology is to unpack what is meant by the term. Schlechty (2005) defined technology in the context of education as an expressive and instrumental organization as "the means of doing the job, whatever the means and job may be" (p. 200). The central goal within expressive organizations is to satisfy member needs, whereas instrumental organizations are intended to "pursue some set of rationalized goals, produce products, or provide services valued by persons or groups external to the organization" (Schlechty, 2005, p. 200). There is tension between the focus of expressive and instrumental purposes of current schooling that shows up in conversations around how digital technology is or is not a means to get the job of educational goals done.

Hughes (2004) described technology as messy and complex and posited that technology is often simplified to mean computers and the Internet, when in reality, it is "full of contradictions, laden with human folly, saved by occasional benign deeds, and rich with unintended consequences" (p. 1). The National Research Council (2012)

defined technology broadly to include "all types of human-made systems and processes—not in the limited sense often used in schools that equates technology with computational and communicative devices" (p. 11). Technology devices are not needed to provide opportunities for affiliation or socialization, but technology as a way to design and improve creative systems used in the classrooms can support those goals. This is congruent with Hughes's (2004) overarching theme of creativity, that technology is "offering creative means to a variety of ends" (p. 5). The growth of digital technology in schools is in many ways reflective of the changing landscape of society; while there is a measurable increase in the number of mobile devices and access to the Internet, there is simultaneously a series of new innovations and technology about what, how, and when to engage with information, with others, and with oneself.

Personalized learning has emerged as a driver in school improvement models and brings together the expressive organization's goal to attend to the concerns of students, as well as the instrumental goals of achieving mastery of learning goals. Rubin and Sandford (2018) described the three core components of personalization as differentiation, pacing, and agency, and they situated digital technology as a way of actualizing these components in the classroom. The element of differentiation is the scaffolding of learning based on individuals' differing profiles, which include varied proficiency levels, cognitive skills, and social-emotional states. The element of pacing refers to the differing speeds students use to progress through competency-based progressions. Pacing that enables students to move forward without waiting on the teacher or their peers is a goal. Rubin and Sandford described agency as emphasizing self-directed learning and student ownership. Teachers can focus on agency "by offering

students increased voice and choice; and through a focus on individual identity, interest, and ability" (p. 26). Rubin and Sandford anchored blended learning as a key strategy for achieving personalization systemically in a school through the use of digital technology. Models of blended learning have become significantly more prevalent in recent years in response to the need for school leaders to consider student digital technology use in a more meaningful way that is aligned to a vision for personalization.

The definition of blended learning has been expanded and refined over time. For the sake of clarity and a common discourse, Horn, Staker, and Christensen's (2015) definition captures the complexity of blended learning, but also in a way that is accessible. They defined *blended learning* as:

> Any formal education program in which a student learns at least in part through online learning, with some element of student control over time, place, path, and/or pace; at least in part in a supervised brick-and-mortar location away from home; and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience. (p. 34)

Blended learning tactics require teachers to intentionally design when and how students will use digital technology and when and how they will engage in face-to-face experiences.

Though much has been written about how to implement different models of blended learning, few studies have been conducted of the personal experiences of those designing blended learning experiences for learners, particularly in the K-12 environment. The instructional changes necessary to enact blended learning require teachers to challenge their assumptions about school, design experiences differently, and

develop new skills to navigate a more personalized learning environment that blends the use of digital technology with face-to-face experiences. Engaging in the process of designing and implementing puts the instructor at the center of a feedback loop in which he or she discovers what works, what does not work, and how plans either go as expected or take unexpected turns.

Problem Statement

Designing a blended learning environment that integrates face-to-face experiences with digital online experiences and that allows for some student control of place, path, and pace of learning is, at the very least, a complex task. My intent in this phenomenological study was to empathize with three technology design coaches and cast light on their experiences designing for autonomy in a blended learning environment. Contextually, their charge was to design a 2-year professional learning for K-12 teachers about how to implement blended learning in the classroom. Blended learning is not simply achieved by putting computers in the hands of the learners. It requires design that shifts pedagogy significantly from that of traditional schooling. These shifts include moving control solely from the teacher to the student, valuing mastery of content over the mere completion of assignments, engaging in formative assessments more often than a single summative assessment to gauge progress, providing opportunities for students to set goals rather than merely complete the teacher's goals, and supporting students as creators of content versus just consumers of content (Rubin & Sandford, 2018).

These five major pedagogical shifts are all enhanced by a student's sense of autonomy. Deci and Ryan (2002) captured the essence of *autonomy* as:

> Being in the perceived origin or source of one's own behavior. Autonomy concerns acting from interest and integrated values. When autonomous, individuals experience their behavior as an expression of the self, such that, even when actions are influenced by outside sources, the actors concur with those influences, feeling both initiative and value with regard to them. (p. 8)

Autonomy and this break with traditional learning environments can have as much of an impact on educators as they do on students. Practices that once were successful are no longer enough, and new concepts such as digital distraction, digital fluency, digital citizenship, and privacy take a more central role. When the pedagogy of blended learning is paired with an increase in student devices, educators begin to consider elements of instructional practice in new ways.

The experience of designing blended learning provides opportunities for reflective conversations for anyone intending to personalize instruction or enhance student autonomy. Navigating autonomy within a blended learning environment is a journey of reflection and surprise that has the potential to shift perceptions, practices, and self-concepts.

At its core, blended learning is meant to make learning more meaningful to each individual. As a new teacher, I felt my own autonomy slipping away and slowly being buried under the layers of bureaucracy, state testing, and the professional learning I was required to attend. When I experienced flashes of professional learning that valued my context and what I brought to the table, I was jolted by the recognition of the same sense I had when I was 6 years old while following my intuition to spend a little more time with

the math beads. Attending to autonomy changed how I viewed myself as a professional, and it defined my paradigm of how to design professional learning.

Equity pause #2. My current position as a director of technology integration in a large urban school district in Texas positions me directly in the midst of the challenges associated with the equitable distribution of and access to digital technology for all students. Some campuses have access to funds and resources that other campuses do not, such as PTAs or parental means to provide devices for their students directly. Access to Wi-Fi at home is also a challenge for many students. Though leaders have made efforts to address these challenges, students continue to feel the access gap in different ways.

Teachers across the district have classrooms in which either every student has a device or there are only a few devices available for shared use. Though blended learning can occur with any configuration of technology devices, the assumption persists that blended learning is only for those with complete access to one-to-one computing or those who have the luxury of moving away from test preparation. Regardless of the level of access to devices, all students should have access to experiences with digital technology that embrace the shifts required for personalization.

Students who engage with digital technology only as a separate, stand-alone activity do not receive the benefits of the student-centered underpinnings of a blended model. When campus leaders are under pressure to increase test scores, there is often a sense of reluctance to allow for a personalized approach. Therefore, inequity in experience grows, particularly in schools that are not meeting state standards and schools with higher populations of Black and brown students (Smith, 2018).

In my current district, we are privileged to have had bond funds approved for purchasing devices to bring every campus to a three-to-one student-to-device ratio, and each high school to a one-to-one ratio. District and Board leadership made transformative technology part of the strategic plan, and funds were allocated to purchase a district-supported learning management system (LMS), which was Canvas LMS.

I now supervise a team of 20 technology design coaches assembled to support 130 schools' shift to blended learning through coaching. Another essential role for the technology design coaches is to design and implement professional learning that models the pedagogical shifts required for blended learning, as well as the mechanics of using an LMS. I designed this study to provide a window into the experience of three of these technology design coaches as they discovered the moves that propel teacher learning and the adoption of blended learning practices in the classroom.

Purpose and Research Questions

My purpose in this phenomenological qualitative study was to examine the personal stories and experiences around the choices that three technology design coaches made as they designed for teacher autonomy in a blended learning environment. The professional learning they designed was intended to guide teachers in the implementation of the changes necessary to move toward a blended learning environment in their varied classroom contexts. The content of the professional learning, therefore, modeled the decision-making process and the choices the designers made as part of the experience for teachers. The challenge for the three technology design coaches was to work as a cohesive team to design an experience that would inspire teachers and provide the time for them to integrate and value new pedagogical shifts as they developed their own

practice around blended learning. The coaches were challenged to make space for autonomy in their own professional learning design.

Exploring the professional learning design through the eyes of the technology design coaches revealed insights about the processes they used to challenge assumptions and navigate cognitive dissonance, and attend to self-regulation both for the teacher learners and for themselves. Making space for autonomy in the classroom inevitably requires the suspension of some current practices regardless of whether the "classroom" is full of teachers or full of students. It is about letting go of current practices and replacing those with something new. Exploring this experience has implications for future professional learning, but also provides insight into the experience teachers may have when designing for their students.

To understand and empathize with the designers, the research questions I explored were:

1. What does it mean to make space for autonomy in a blended learning environment?
2. When designing for autonomy, what beliefs and practices are strengthened, and which are let go?

Throughout this study, I witnessed the gifts of thoughtful designers as they manifested in professional learning. Examining their experiences and the actions they took as a result of implementing their design cast new light on ways to navigate professional learning both in the design and the implementation. These experiences were intended to contribute to the body of literature around blended professional learning.

Equity pause #3. Each of the three technology design coaches leading this professional learning represented one of three cadres that are also a structural design of the team—the north cadre, central cadre, and south cadre. These cadres map to a geographic region of the city, and various cadre members work together on projects to share experiences that span the entirety of the district. The team of coaches is predominantly White, and over the last 2 years, several coaches of color have been promoted to other positions of leadership in the district or in neighboring districts. The coaches on this professional learning project are all White and female, as am I. Though they have each served on campuses with diverse populations and each is committed to addressing inequities in education, the exploration of these questions and the experience was framed by my White female perspective.

In addition to belonging to the same team with the same core mission within the district to build the capacity for blended learning across the grade levels, I was the supervisor for the three technology design coaches participating in the study. During the course of the study, my supervisory duties were transferred to the chief of the technology department in order to communicate to the participants that their job security would not be affected by participating in the study. Power dynamics are part of the constant shifting and negotiation in any work environment, and though my intent was to mitigate those influences by design, it was more important that I attend to them openly.

Conceptual Framework

In this study, I put self-determination theory (SDT; Deci & Ryan, 1985) in conversation with blended learning theory (Horn, Staker, & Christensen, 2013; Horn et al., 2015; Staker, 2011). "Self-determination theory begins by embracing the assumption

that all individuals have natural, innate, and constructive tendencies to develop an ever more elaborated and unified sense of self" (Deci & Ryan, 2002, p. 5). Ryan and Deci (2017) identified three fundamental psychological "nutrients that are essential for growth, integrity, and well-being" (p. 10): autonomy, relatedness, and competence.

The components of Deci and Ryan's framework add a critical perspective to the core components of a blended learning environment by illuminating the ways in which a blended learning environment can be designed either to attend to or to ignore autonomy, relatedness, and competence. Equity-centered design thinking (Clifford, 2017) outlines a process to design and examine the essential components of a blended learning environment in service to the key psychological needs for well-being.

Mapping the research territory in a conceptual framework allows for both focus and flexibility to explore the research and data. Figure 1 situates the connectedness of the three key psychological needs for well-being in Deci and Ryan's SDT—autonomy, relatedness, and competence—as the foundational concepts under investigation. Autonomy is emphasized to demonstrate a focus in the research, though it is never fully separate from the concepts of relatedness and competence. The design process promotes engagement with the myriad assemblages that form, reform, and even reject the neat and tidy conceptual framework preconceived in Figure 1 (Masny, 2016). The components of equity-centered design thinking guide how autonomy is explored, allowing for intentional noticing to take place throughout the process, which informs elements in other phases non-sequentially. All of these concepts are layered over the backdrop of the framework for a blended learning environment (Horn et al., 2013).

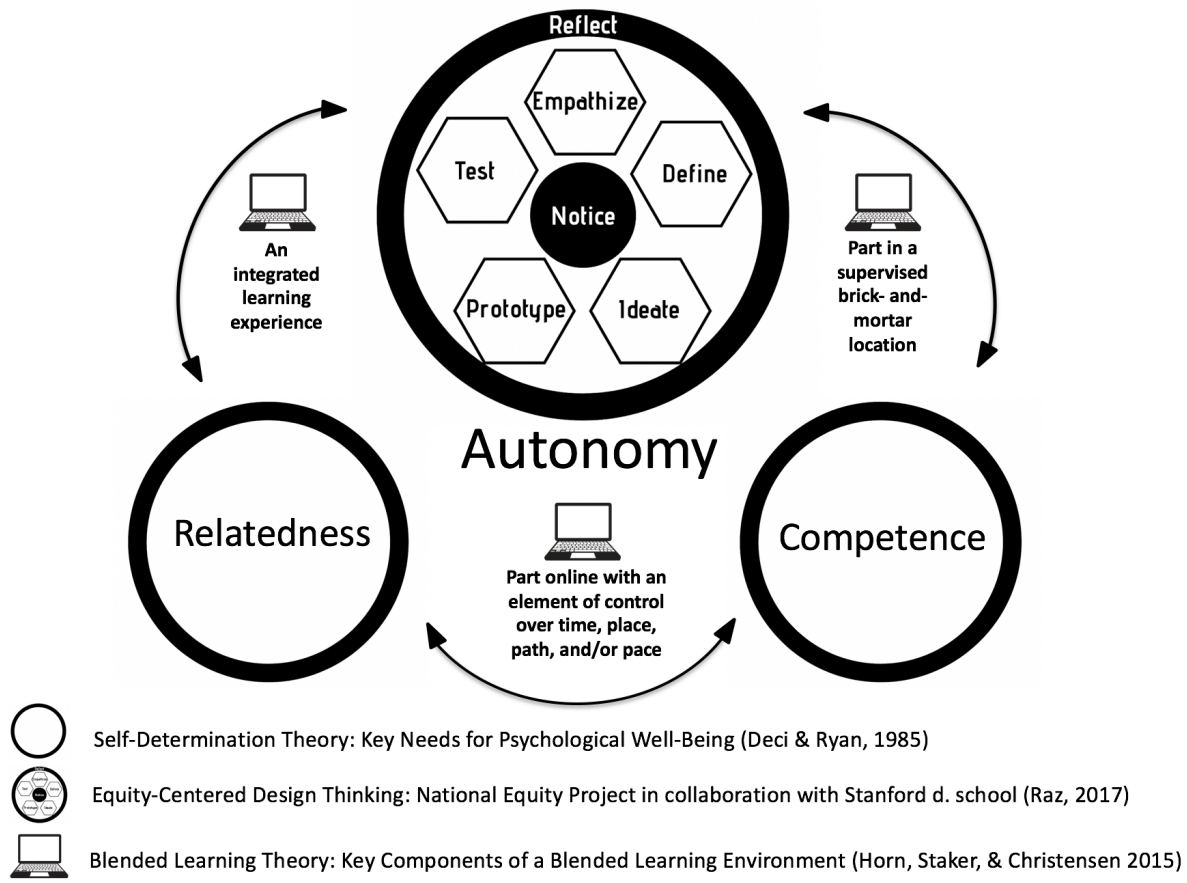


Figure 1. Original conceptual framework of the study.

Equity pause #4. How might a legacy of institutional oppression impede the process of evaluating autonomy in our current educational context? Educators may believe that students are making and endorsing their decisions when, in reality, the forces of compliance, social pressure, or institutionalized external motivators are difficult to isolate. Barriers and perceived barriers to acting in a fully autonomous or integrated manner can be as minor as not having permission or as serious as being fearful of consequences that threaten basic safety, or are even life-or-death. Depending on who you are and where you experience school, the context is different.

Epistemological Stance

My belief is that knowledge is constructed, influenced, and always in a state of becoming through social interaction. Knowledge is always in process, subject to influence, and responsive to our experiences. My phenomenological attitude is a reminder that it is "hard not only to distinguish a particular phenomenon from its context, but also to distinguish ourselves from the phenomenon" (Dahlberg, 2006, p. 15). A phenomenological approach values the use and examination of language, so putting words to one's experience is an essential part of the process of learning about the experience in question.

Phenomenology created the conditions to use the philosophical differences of Heidegger and Husserl to define my qualitative stance (Crotty, 1996). My philosophical perspective takes a piece of Husserl's descriptive stance of "being in the world" (*dasein*) and a piece of Heidegger's interpretive stance of what exists in consciousness (Groenewald, 2004). In order to understand a phenomenon through research and describe its essence, we have to question our own taken-for-granted assumptions that we have in relation to the world when we are in "the natural attitude" (Dahlberg, 2006, p. 15). Husserl called that an un-reflective stance to the world in which we assume that what we see simply is. This idea anchored the need to challenge my own perceptions at every turn.

My belief is that we are all always in a process of becoming. Therefore, I lean more toward Heidegger's approach to "plausible interpretations of manifestations and appearances" (Vagle, 2014, p. 30) rather than a universal *essence* of the unique experience of the phenomenon. How will meaning reveal itself? Wonder is essential to a

phenomenological study (van Manen, 2016). I constantly wonder how educators navigate their own belief structures in the face of change and either strengthen them or let them go.

A post-structural approach informed my stance and my thinking. The interconnectedness of my role as researcher, the participants, and the phenomenon means that meaning itself is constantly moving, shifting, and reforming. Post-structural theorist Jacques Derrida influenced my choice to use the narrative text of dialogue and deconstruction in order to examine assumptions, reveal values and interests, and unfold assumptions into full view to invite examination and inspire additional questions (Agger, 1991).

Post-intentional phenomenology, as described by Vagle (2014), builds upon the traditions of phenomenology to inform an approach that embraces the pronoun, "through." This linguistic shift enabled me to better align to my epistemological stance. Instead of the phenomenological focus on essence, or "of" a phenomenon, and beyond the phenomenological coming into being approach, or "in" a phenomenon, the intentional or interconnectedness approach enables the researcher to uncover insights "through" a phenomenon. Vagle described this commitment to craft as "chasing intentionalities and their various possibilities as they take complicated shape in multiple, sometimes competing contexts. Crafting this type of phenomenological research means we embrace phenomena as social and not belonging to the individual" (p. 41). This stance allows for an exploration of participant interpretations to seek new insights along the edges and in the leakages found in the data (Vagle, 2014). This supported my choice to focus on a dialogic approach and provided multiple methods for participants to reflect on their

common experience of designing learning for teachers. A post-intentional phenomenological approach allowed for three individuals' experiences of designing learning, my experience with the phenomenon, and the social context in which it manifested to weave in, around, and through one another, uncovering new insights and experiences in the arena of designing for autonomy in a blended learning environment.

Equity pause #5. I have always been a keen observer of my surroundings. I watched my older brothers for cues about how to navigate my parents and school. Through high school theatre, I learned how to try on new behaviors to create a different set of experiences. When I was a teacher, I studied my students. As an adult, I learned from my father that everyone is revealing their map of the world all the time through their words, their actions, and their physiology.

I journaled incessantly from the time I could write, and I regularly go back to read how my understanding of myself has changed over time. There is a great luxury present in what I see in those early pages. The pressure to present myself one way or another was almost always an internal battle. I did not have parents or society sending me the message that there were limits on what I could become or what I was allowed to pursue. My epistemological stance that knowledge is constantly forming and reforming is, in a way, related to the privileges my life allowed for such thinking. Only when I was in my early 20s did I realize that my status as an LBGTQ woman forced me to have to articulate and defend myself against being nothing more than a static label.

Definition of Terms

Autonomy is a term used to describe the need to self-regulate one's experiences and actions. It is associated with feeling volitional, congruent, and integrated. "The

hallmark of autonomy is that one's behaviors are self-endorsed, or congruent with one's authentic interests and values" (Ryan & Deci, 2017, p. 10).

Blended learning is any formal education program in which a student learns in part through online learning, with some element of student control over time, place, path, or pace, and in part in a supervised brick-and-mortar location away from home, and in which the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience (Horn et al., 2015).

Bridling is a "phenomenological attitude in research, [which] means to be 'actively waiting' for the phenomenon, and its meaning(s), to show itself, and is an activity characterized by a kind of 'non-willing' or 'dwelling' with the phenomenon" (Dahlberg, 2006, p. 16).

Design thinking is a design method that provides a solution-based approach to solving problems. The Hasso-Plattner Institute of Design at Stanford, or d.school, is dedicated to the process of developing, teaching, and implementing the design thinking process (Dam & Siang, 2019). The five stages of design thinking, according to d.school, are as follows: empathise, define (the problem), ideate, prototype, and test (Dam & Siang, n.d.).

Equity-centered design thinking is a collaboratively developed enhancement to the design thinking process:

> This new framework was created in May 2016 to hold the vulnerability and courage needed to develop one's self-awareness as an equity-centered designer. We added two new design modes to the existing hexagonal d.school design thinking visual: Notice and Reflect. (Clifford, 2017, para. 1)

Equity pause is an intentional reflection in the design thinking process. According to equityXdesign (2016):

> Strategic equity pauses stop the clock to reflect on our language, ideas, and hunches, in the context of a discourse of transformation. Without this moment to think, our brains default to the familiar and the known, making a repeat of past practice likely. Incorporating these discourse checks and pauses after each stage ensures that our ideas remain on the path of achieving equity. (para. 54)

Learning management system (LMS) is a digital platform that connects the online activity and the face-to-face activity for teachers and students. It is:

> An online learning system that enables communication, the dissemination of resources, and the implementation of learning activities with the use of the educational features included in the LMS, all this to a group of learners within a secure space managed by a teacher while being accessible by any type of technological device connected to the Internet. (Stockless, 2018, p. 1106)

Personalized learning provides learning opportunities in which learners are empowered to control their own learning.

Post-intentional phenomenology is a phenomenological philosophy that approaches a phenomenon in its multiple, partial, and varied contexts. It is grounded by a commitment to the intentionality or interconnectedness between human subjects and objects in the world. Additionally, a post-structural lens focuses on what the phenomenon might become, not simply the essence of the phenomenon under investigation. It is centered on the idea that:

> Whatever understanding is opened up through an investigation will always move with and through the researcher's intentional relationship with the phenomenon—not simply in the researcher, in the participants, in the text, or in their power positions, but in the dynamic intentional relationship that tie participants, the researcher, the produced text, and their positionalities together. (Vagle, 2014, p. 30)

Self-determination theory is "an *organismic perspective*, approaching psychological growth, integrity, and wellness as a life science. SDT assumes that humans have evolved to be inherently curious, physically active, and deeply social beings" (Ryan & Deci, 2017, p. 4). SDT analyses are focused primarily at the psychological level and differentiate types of motivation along a continuum from controlled to autonomous.

Technology in the context of this study refers to broad "means of doing the job, whatever the means and job may be" (Schlechty, 2005, p. 200). Technology in the context of blended learning represents the hardware, the software, the Internet, and the technology of blended learning pedagogy in practice.

Delimitations of the Study

This study is inextricably tied to the availability of the phenomenon under consideration. My role as director of technology integration allowed me to focus on the connectedness of the experience of three members of a relatively new team in a large urban school district in central Texas, the unique professional learning experience they led, the content, and my own experience observing the phenomenon. I used critical and convenience sampling methods to ensure participants with a shared lived experience would have the opportunity to critically engage with one another to examine their

common experience. The challenge of designing for autonomy in a blended learning environment was clear in this critical case, and the individuals were easily accessible, which provided multiple opportunities to collect data (Creswell, 2013). This study was delimited to this unique context and the experience of three technology design coaches providing professional learning for teachers, and not to the experience of the teachers on the receiving end of the professional learning.

Organization of the Study

Ask anyone for the definition of "designer" and you will invariably get a different answer each time. The process of design manifests across the spectrum of human experience, in architecture, in engineering, in product development, in artistic expression, in musical composition, in education, in rituals, and more. We are always both experiencing others' design and designing our own experience. Someone has designed the buildings in which we are currently sitting, yet the experience we have reflects the interactions that we uniquely bring to that space. Preconceived notions about what will, can, and should happen are layered into each product we buy or service we employ. In education, teachers are designing experiences with explicit, implicit, or even unknown outcomes. Those bringing purposeful attention to the relationship between designer and those who are being designed for attempt to bring an awareness to the intentional relationships between multiple components and contexts at any given time.

According to his blog, Leif Huff, partner and executive director at IDEO New York, suggests that to think like a designer, one can cultivate certain mindsets (Huff, 2017). Two of the critical mindsets described were curiosity and the ability to challenge assumptions. My own persistent curiosity has been one of the more consistent themes in

my personal and professional life. As this study unfolded, it became clear that the work of challenging assumptions was also a key component for the technology design coaches, for the phenomenon of designing for autonomy in a blended learning environment, and for me as a researcher.

This study is organized as a journey through my own design thinking process. Specifically, the equity-centered design thinking process was my guide. This process, which includes the essential phases of "notice" and "reflect" as part of the practice (Clifford, 2017), resonated with my need to attend explicitly to my own assumptions while exploring the experience of others. It allowed me to demonstrate the interconnectedness of myself as the designer and the experience of the phenomenon, the participants, and the reader. With every step of the design process, I was the initiator of that process, and my inherent biases needed to be explored along the way. Engaging in design thinking brought the transparency of the process front and center and allowed for the readers to situate their own understanding alongside mine. This required a dedication on my part to openly investigate my own biases throughout the study (Ortiz Guzman, 2017). Design thinking provided a way to make looking in the mirror a consistent practice and a structure for exploring what was not obvious based on positionality or current circumstances.

> There is an emotional component to waking up—realizing you have been living in a reality that you couldn't see, that the forces of white supremacy, patriarchy, and capitalism have been at play, that you were and continue to be complicit. This realization is painful and disempowering—until you latch on to taking action that empowers you, and gives you a way forward. You must believe that you are a

> designer and have agency to identify the ways inequity has been designed into being and redesign it. The act of being a designer helps you believe it to be true even if you don't feel it at the beginning. (Ortiz Guzman, 2017, p. 87)

Though initially sequential in nature, the phases of the equity-centered design thinking process can also skip forward and loop back to different phases to provide additional insights. In some cases, the phases blend into one another. This non-linear component to the design thinking process complements my epistemological belief that knowledge is constantly forming, reforming, and bursting forth in unexpected ways by prompting moments that require multiple moments to reconsider and reexamine along the way.

IV. PHASE III: DEFINE

The define phase is intended to uncover patterns and insights into a topic in order to guide the ideation and prototyping phases. In this phase of the study, I consulted the research and literature by those who have explored designing blended learning and autonomy in an educational context to provide insight and expertise from the landscape. Defining clarifies the design space in which the phenomenon exists (Dam & Siang, 2019).

In this chapter, I review the literature connected to this study. This phenomenological study was situated in a unique context in which I examined the experience of professional learning providers (i.e., technology design coaches) who were modeling and teaching blended learning with a focus on increasing autonomy for their teacher-participants. With the increase in digital technology available in schools, blended learning models have become more and more prevalent, instigating the development of new instructional models. Blended learning models increased in popularity around the year 2000 (Güzer & Caner, 2014). As teachers began to make sense of how to combine online access to information, flexibility, and response rates to student input with the rich social components of face-to-face instruction, the desire to explore authentic applications in the classroom grew (Gerbic, 2011).

New pedagogical shifts, such as the purposeful design and facilitation of blended learning, provide a window of opportunity to examine how we teach, who we teach, and who we are in the process. This review was meant to draw open the curtain on the stage of why autonomy is a factor in the actualization of blended learning. Current research and experience on autonomy-supportive practices in education have continued to expand

how blended learning is continuing to evolve. This review was intended to be a site of convergence where multiple voices from different educational settings and experiences could come together to generate the foundation for the conceptual framework used to guide the study.

This literature review consists of three main areas of focus: SDT, blended learning, and autonomy-supportive practices. SDT is grounded in the work of Deci and Ryan (Deci & Ryan, 1985, 2002; Ryan & Deci, 2006, 2017) and sets the foundation for exploring autonomy in the educational context. The section on blended learning includes a brief overview of the growth and use of blended learning models in the service of personalizing learning, the role of integration between face-to-face and online experiences, and the key processes that support student autonomy. In the section on designing and modeling autonomy-supportive practices in a blended professional learning environment, the focus is on the practice of designing and implementing blended learning in education. Highlights include how learning to facilitate blended learning challenges beliefs around instructional practices and routines. The choices made by the blended learning designer influence the experience in an autonomy-supportive environment. This discussion highlights the choices of purposeful cognitive dissonance and self-regulation.

Self-Determination Theory

Self-determination theory (Deci & Ryan, 1985) was part of the theoretical framework that guided this study. This theory, with expansive applications across multiple fields, posits that humans have psychological needs for healthy functioning that are tightly connected to intrinsic motivation and past performance. According to SDT,

autonomy, competence, and relatedness are the three needs for psychological growth, internalization, and well-being (Deci & Ryan, 2002; Van den Broeck, Ferris, Chang, & Rosen, 2016). *Autonomy* is the feeling of being the origin or perceived origin of one's own actions (Deci & Ryan, 2002). "To be autonomous means to act in accord with one's self—it means feeling free and volitional in one's actions" (Deci, 1995, p. 2). *Competence* and *relatedness* refer to a feeling of effectiveness in one's environment and having opportunities to exercise one's skills or capacities (Deci & Ryan, 2002). "Relatedness refers to feeling connected to others, caring for and being cared for by others, to having a sense of belongingness both with other individuals and with one's community" (Deci & Ryan, 2002, p. 7).

The concepts in SDT are areas for research and application in many fields. Focusing on autonomy in the context of SDT serves as a reminder of the relationships among autonomy, competence, and relatedness, and the overarching greater purpose they are intended to serve—well-being. Little, Hawley, Henrich, and Marsland (2002) suggested that autonomy "seems to function more as an aspect of actions that support either the need for competence or the need for relatedness rather than an independent need" (p. 392). The interactions of these three key concepts ultimately contribute to developing an integrated and unified self.

In the research on autonomy, the definitions of intrinsic and extrinsic motivation become more granular and defined. The self-determination continuum helps to demonstrate the differing levels of self-determination using types of motivation and types of regulation. Specifically, in Deci and Ryan's organismic integration theory (OIT), a sub-theory of SDT, the process of integration can be viewed on a fluid scale (Deci &

Ryan, 2002). The types of motivation move from amotivation to extrinsic motivation, to intrinsic motivation, or the most autonomous. Types of regulation move from non-regulation to four types of regulation within extrinsic motivation: external regulation, introjected regulation, identified regulation, and integrated regulation. Intrinsic regulation is at the most self-determined side of the continuum (Deci & Ryan, 1985, 2002). The continuum provides a process to identify and classify behaviors by levels of self-determination.

Baard (2002) used the term *endorsement* as an essential component of autonomy. Within SDT, "People's open awareness is especially valuable in facilitating the selection of and engagement in behaviors that are consistent with the people's values, interests, and basic needs" (Baard, 2002, p. 268). In the common uses of the word autonomy, the key characteristic of endorsement is often lost. Autonomous robots, for example, are programmed to respond in a particular way to a certain set of input or data, without external influence. In SDT, the distinction is that people respond, agree, proceed, and ultimately endorse or deny information based on a multitude of contexts. Vallerand and Ratelle (2002) further described intrinsic and extrinsic motivation in terms of a hierarchical model, noting that global, contextual, and situational factors contribute to differing levels of motivation. Working in accordance with one's own varied need, rather than opposing them typically represents the more congruent and autonomous experiences (Ryan & Deci, 2017). Little et al. (2002) suggested autonomy is actually a set of actions fueled by the need for relatedness or competence, and does not constitute a need alone. They suggested personal agency is necessary to execute the desired actions. "We define personal agency as the sense of personal empowerment, which involves both knowing

and having what it takes to achieve one's goals" (Little et al., 2002, p. 390). This definition of agency, or the explanation of the agentic self, expands the definition of autonomy by reminding us that it is a connected component of other key psychological needs. Educational researcher Phillip Schlechty (2011) captured this idea when he described students as volunteers. Students, and all people, are ultimately volunteers of the attention they are willing to give, even if they are required to do something. Teachers who embrace this idea often have to grapple with how they will internalize how they design work for students that may generate compliance as opposed to true engagement, or in this case, autonomy.

Self-determination theory in education. The application of SDT to education is not new (Power & Goodnough, 2018; Sergis, Sampson, & Pelliccione, 2018). Student and teacher motivation are often topics of research for teachers, administrators, and professional learning leaders. Research on the topic of student learning and teacher practice often connects in some way to SDT.

One way in which self-determination shows up in education is through the lens of autonomy-supportive practices and recommended actions of the teacher. Núñez and León (2015) clarified categories of autonomy-supportive practices, such as (a) providing meaningful rationale, (b) acknowledging negative feelings, (c) using non-controlling language, (d) offering meaningful choices, (e) nurturing inner motivational resources, (f) providing unconditional positive regard, and (g) displaying patience. Additionally, teachers' own sense of an autonomy-supportive work environment plays a role in the development of their own autonomy-supportive learning space. Teachers who are empowered to make decisions based on their own professional judgement and are trusted

by their leadership are more likely to operate independent thinking, enhance school climate, and contribute to school progress (Hadar & Benish, 2019).

Autonomy-supportive practices by the teacher are intended to directly facilitate the development of self-regulation skills for the learner. Education has a growing base of research around self-regulated learning and how autonomy contributes to that end. For example, Hu and Zhang (2017) conducted a study with a focus on student autonomy aligned to SDT research and how that connects to practices of self-regulated learning. According to Hu and Zhang, cultural background, instrumental motivation, and educational culture (reactive or proactive) have a notable effect on autonomy. For example, Hu and Zhang described a reactive culture in China for their participants who were used to being monitored and not self-monitoring. A proactive educational culture is one that has been developed with practices of self-reflection and self-monitoring at the core, which would contribute to a more autonomous experience. Autonomy is often misunderstood as an isolated or individualistic concept or goal (Ryan & Deci, 2017). The ideas of building community, culture, and connection to others are often dismissed in the understanding of autonomy. Research on self-regulated learning in online and blended learning environments provides insight into factors that are considerations when designing for autonomy in these spaces. The communities to which students belong, both inside and outside school, play an integral role in how students learn to trust themselves by navigating their relationships with others.

Autonomy in the Montessori model. One educational model that is steeped in a commitment to developing student autonomy is the Montessori model (Montessori, 1967, 1976). The Montessori philosophy has inspired many school leaders to embrace

autonomy-supportive practices, demonstrating insights into research on both the individual and the classroom community. Autonomy, competence, and relatedness echo tenets of choice, working toward mastery, and building community (Casquejo Johnston, 2016): "Autonomy supports are a hallmark of Montessori methodology. Montessori spoke of choice, challenging teachers to allow students to choose work" (p. 29).

Those in the Montessori community are currently navigating questions around the inclusion or exclusion of digital technology that can inform a blended learning perspective that is also committed to student autonomy. Herman (2012) posited that there is a need for a deeper understanding of the Montessori philosophy to use a balanced approach to digital technology. The use of digital technology can be seen as an outsourcing of rich human-to-human interaction through an increase in screen time and unlimited game playing (MacDonald, 2016). However, the Montessori philosophy describes the integrity of the moment and creative boundary-making, and can therefore assist in cultivating a positive relationship between humans and digital technology by examining what, when, and how much technology will play a role in the educational experience. Other research supports the need to make intentional connections between digital technology use and the Montessori philosophy (Powell, 2016). The Montessori belief that education should be a preparation for life includes the use of tools of the current times (MacDonald, 2016).

Autonomy in online learning models. On the other end of the spectrum, researchers have used SDT to examine purely online educational models to understand which teaching practices learners deemed most successful in that environment. Butz and Stupnisky (2017) used SDT to examine online learning effectiveness and ways to

increase relatedness, which has been cited as one of the greater limitations of online learning experiences. A blended learning environment includes an online component, which makes the considerations for online design of particular interest. If learners can connect with one another more effectively online, then their feelings of autonomy may increase. Several themes emerged as a result of this work, most notably the theme of students' relatedness beliefs. This theme represented students' expectations around connecting with others online. Students tended to think of online experiences as being void of social interactions and did not expect to find relatedness in that space. Additionally, though discussion boards and other features of an online interface can be supportive of relatedness, the factor of comfort around privacy and public sharing is a theme that can impede the likelihood to engage fully online.

Yoon and Rolland (2012) explored the experience of online learning in their study, also through the lens of SDT. Knowledge sharing is often a hallmark of virtual learning communities. Yoon and Rolland conducted a study to determine which SDT components (relatedness, autonomy, and competence) affect knowledge sharing practices in the virtual space. In their model, they discovered that perceived autonomy did not affect practices of sharing online, though perceived relatedness and competence did. Feeling more connected to peers and more confident about the learning contributed to the willingness to share online. This further illustrates the interconnectedness of autonomy, competence, and relatedness and how different perceptions might play a more significant role depending on which element of blended learning is emphasized in the learning design. When designing an online activity that includes knowledge sharing, the designer or teacher might want to consider ways in a face-to-face experience to develop a sense of

relatedness and competence as a scaffold to find more success when engaging in an online activity that requires knowledge sharing.

Common criticism of self-determination theory. One of the critiques of SDT surrounds the question of whether this theory is relevant only in national cultures where individualistic values are high, such as in the United States. Models of cultural individualism versus collectivism demonstrate that high-context communication (i.e., closer direct ties with others) fits with more collectivist cultures and low-context communication (i.e., loose bonds with others and a higher tendency to rely on social media for connection with others and information) tends to be more indicative of individualistic cultures (Zheng, 2016). Dimensions of shared cultural values were explicated by S. H. Schwartz (1992). According to SDT, choices in the academic setting play a significant part in satisfying autonomy (Deci & Ryan, 1985). Ryan and Deci (2006) stressed that "authentic or autonomous acts proceed from one's core self, representing those preferences and values that are wholeheartedly endorsed" (p. 1561). These autonomous acts also include cultural values that may be at work for an individual. This description of autonomy is distinctly different from the description of autonomy as independence. Independence is a common critique of autonomy, positioning autonomy erroneously at the opposite end of the cultural dimension spectrum from collectivism and evoking challenges to the general value of autonomy (Ryan & Deci, 2006). Ryan and Deci acknowledged that:

> People are vulnerable to nonconscious primes, a concern highlighted by technologies that can be used to insidiously stimulate desires. That is, nonconscious primes can compromise people's autonomy. Second, when an

> automatized behavior would no longer be reflectively endorsed, it is essential that it be reevaluated. (p. 1574)

Ryan and Deci highlighted the need for an understanding of autonomy as a flexible and fluid concept that is distinctly different from *independence*. Critical and active reevaluation and metacognition distinguish autonomy from independence. In a blended learning environment, self-reflection is a key component in designing for the learner experience. Layering SDT over a construct such as blended learning has the potential to produce new insights when exploring how to increase autonomy and choice in a blended learning environment.

Blended Learning in Service of Personalization

Leaders in K-12 public schools are increasing the adoption of blended learning (Drysdale, Graham, Spring, & Halverson, 2013), yet the amount of research in the K-12 blended learning arena is markedly less than in higher education. I purposely use the terms *blended learning* and *personalized learning* throughout this study to situate blended learning in service of personalization. Each term brings different history and elements that separately inform this connection.

The most cited definition of blended learning was proposed by Garrison and Kanuka (2004):

> Blended learning is both simple and complex. At its simplest, blended learning is the thoughtful integration of classroom face-to-face learning experiences with online learning experiences. There is considerable intuitive appeal to the concept of integrating the strengths of synchronous (face-to-face) and asynchronous (text-based Internet) learning activities. At the same time, there is considerable

> complexity in its implementation with the challenge of virtually limitless design possibilities and applicability to so many contexts. (p. 96)

This definition is essential to the idea that blended learning is not solely online learning, which is a common misconception. Blended learning means that at the core, the designer must make intentional decisions about which experiences will be face-to-face and which will be online. Teachers make decisions about how and when students will engage with what digital technology, such as the types of hardware devices (laptops, Chromebooks, desktops), the types of software (LMS, applications, purchased content), and the Internet. They must also make strategic decisions about when digital technology, as defined in this way, is intentionally not used because it does not help achieve the learning goal.

Blended learning has evolved over time. In a meta-analysis of the blended learning literature, Güzer and Caner (2014) defined the periods of blended learning as (a) first attempts (1999–2002), (b) definition period (2003–2006), (c) popularity period (2007–2009), and (d) present (2010–2012). With increased research and continued evolution, the period from 2010 to the present would have certainly earned additional labels, perhaps the "Hybridization Period" or the "Quest for Balance Period." Clearly, blended learning has changed over the past 2 decades and continues to evolve. In their meta-analysis, Drysdale et al. (2013) examined dissertations and master's theses on the topic and found a common approach to evaluating blended learning was to examine the associated practices and how to implement them in the classroom, usually in the context of higher education. The recurring recommendation was a call for further research on blended learning in the K-12 arena and in the area of professional learning and adoption.

Horn et al.'s (2015) definition and models are popular in the common vocabulary surrounding blended learning, particularly in the K-12 setting. Their definition was the key definition of blended learning used in this study. This definition has three parts, which represent that blended learning occurs (a) in part through online learning (with some element of student control over time, place, path, or pace), (b) in part in a supervised brick-and-mortar location (away from home), and (c) as an integrated learning experience (meaning that the modalities along each student's learning path within a course or subject are connected).

Blended learning models. Key models of blended learning are described as either sustaining or disruptive models. Sustaining models include station rotation, lab rotation, and flipped classroom, whereas disruptive models include individual rotation, flex, a la carte, and enriched virtual, as shown in Figure 2. Sustaining models are much more widely used in K-12 educational settings.

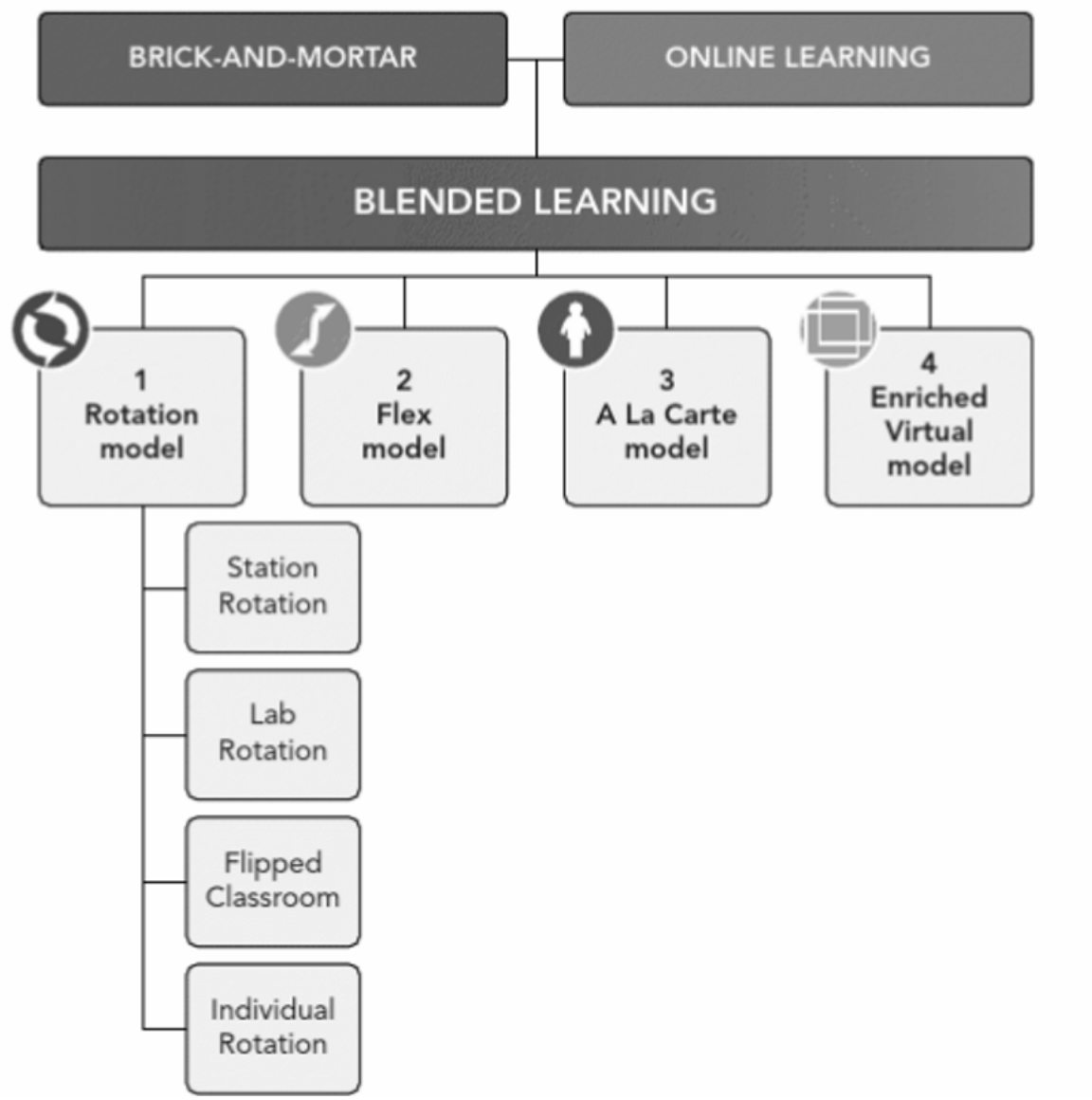


Figure 2. Models of blended learning (Horn et al., 2015, p. 38).

Each model of blended learning has defining structures that differentiate how the students engage with the content and the teacher. Models provide guidance for the foundation of the initial design, but during the actual implementation, teachers often hybridize or switch between models depending on how they choose to design the student learning experience. On its website dedicated to all things blended learning, Blended Learning Universe outlines key structural factors that define four of the most commonly used models in a K-12 setting, outlined in Figures 3 through 6.

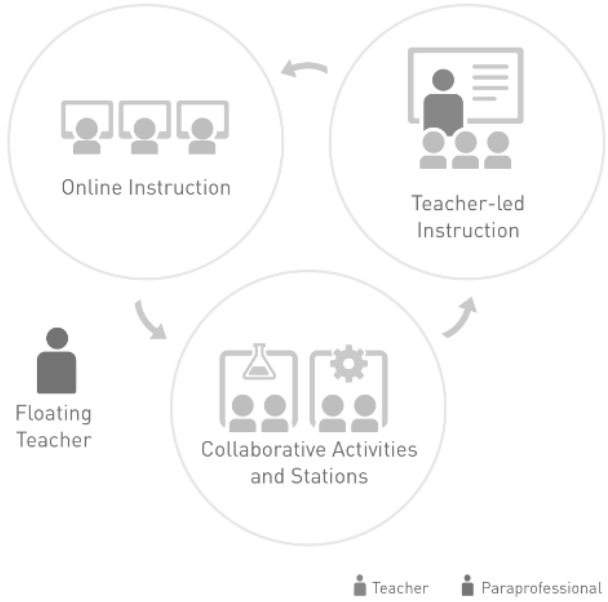


Figure 3. Station rotation model. From "Station rotation model," by Blended Learning Universe, 2019 (https://www.blendedlearning.org/models/). Copyright 2019 by The Christensen Institute. Reprinted with permission.

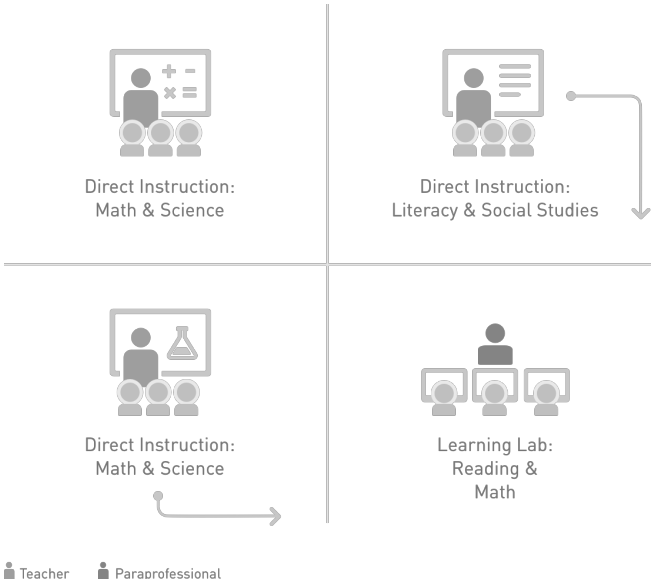


Figure 4. Lab rotation model. From "Lab rotation model," by Blended Learning Universe, 2019 (https://www.blendedlearning.org/models/). Copyright 2019 by The Christensen Institute. Reprinted with permission.

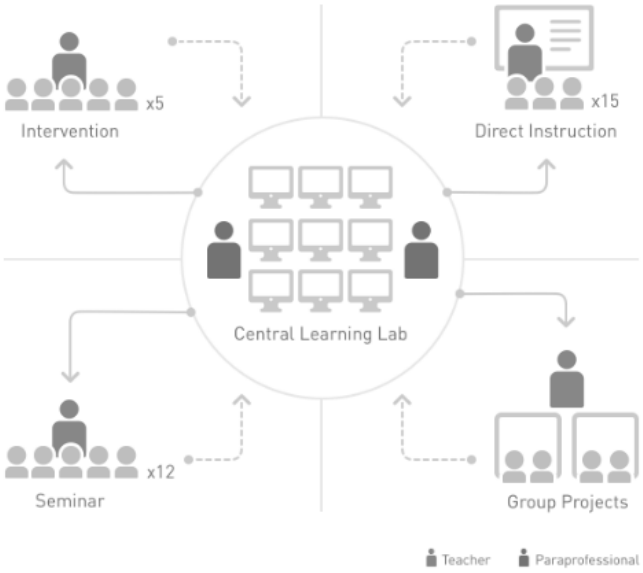


Figure 5. Individual rotation model. From "Individual rotation model," by Blended Learning Universe, 2019 (https://www.blendedlearning.org/models/). Copyright 2019 by The Christensen Institute. Reprinted with permission.

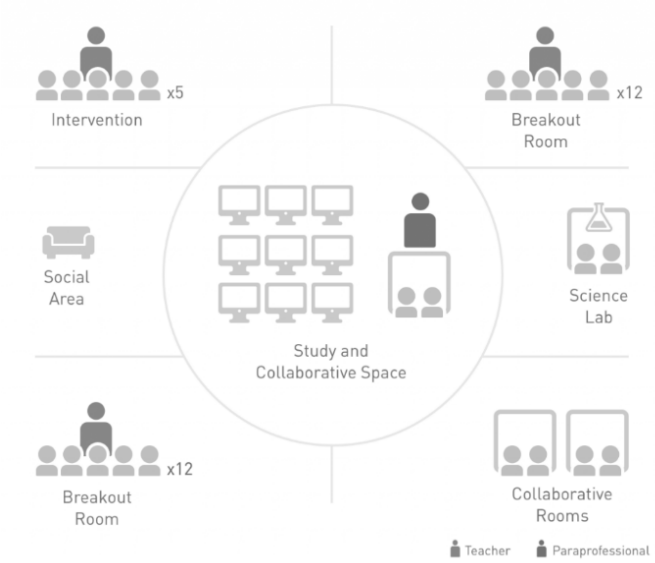


Figure 6. Flex model. From "Flex model," by Blended Learning Universe, 2019 (https://www.blendedlearning.org/models/). Copyright 2019 by The Christensen Institute. Reprinted with permission.

Blended learning models are frameworks that are helpful when designing for a particular set of instructional challenges. For example, if there are only a few devices accessible to students, a station rotation model is more effective as every student does not need his or her own personal device. In an individual rotation or flex model, students need to have access to a device to fully engage with pathways that move at different paces and with varied content.

Blended learning to solve instructional challenges. The International Association for K–12 Online Learning (iNACOL) defines *personalization* as "tailoring learning for each student's strengths, needs and interests—including enabling student voice and choice in what, how, when and where they learn—to provide flexibility and supports to ensure mastery of the highest standards possible" (Abel, 2016, para. 4). Blended learning offers a method to achieve this goal. Rubin and Sanford (2018) sought to connect these buzzwords by situating blended learning as a key strategy to address the challenge of personalization. Additionally, recent definitions of blended learning included a focus on blended *teaching* and the impact of decisions that connect to the student experience: "Blended teaching is a deliberate use of instructional methods designed to increase equity, provide personalized learning opportunities and empower students to control their own learning" (Linton, 2018, p. 16). In this context, choosing blended learning as a teaching model means that personalization and autonomy are at the heart of that instructional choice.

Blended learning provides structures to solve the challenges of personalization and meeting students where they are in order to get them to their goal. Personalization is one of the terms most often used to describe blended learning. Key components of

personalization include (a) student agency; (b) differentiated instruction; (c) immediate instructional interventions and supports for each student on demand, when needed; (d) flexible pacing; (e) individual student profiles (personalized learning plan); (f) deeper learning and problem-solving to develop meaning; (g) frequent feedback from instructors and peers; (h) standards-based, world-class knowledge and skills; (i) anywhere, anytime learning can occur; and (j) performance-based assessments, such as project-based learning and portfolios of student work (Patrick, Kennedy, & Powell, 2013). These components are all common focus areas addressed by school district and classroom leaders, and often entire school improvement efforts are designed around one or more of these areas.

In working to solve the challenges inherent in these components, teachers are asked to adjust and challenge their own assumptions and beliefs about their role. Gerbic (2011) explored Berge's (1995) framework for online teaching and applied it to the changing role of the teacher in a blended learning environment. The four roles outlined are pedagogical, social, managerial, and technical. Each of these categories provides insight into instructor role implications, which include a changing locus of control (from teacher to student); processes to develop connected and meaningful relationships with students; increased visibility into work and reflection online, necessitating increased structure and support through course design; development of self-confidence; and building technical skills. The need for professional learning that supports these role shifts requires a shift as well. Teachers need to experience the blended learning themselves to internalize how these changes manifest in their experience, in addition to learning about tactical implementation in their own classrooms. Studies support the need for further

study in the public K-12 environment with a focus on the teacher role and implications for educator professional learning (Drysdale et al., 2013).

Changes in teacher practice are not limited solely to teachers of core content courses or to the general population. Rivera (2017) examined the effects of a blended learning environment on special education students. She focused on how blended learning environments might provide increased support for students of varying cognitive or physical abilities. According to her review, Rivera noted the increased role of the parent in a blended learning environment, which is an added benefit to students. Additionally, the general education teacher and the special education teacher have an increased ability to collaborate in order to meet individual student needs more easily.

Designing and Modeling Autonomy-Supportive Practices

Designing and implementing blended learning practices in the classroom can be underpinned by professional learning that involves teachers in a simulation of what it feels like to engage as a student in this new learning environment (Bug, 2018). If professional learning providers have not recently led blended learning in their own classrooms, they are simultaneously learning processes that work effectively with teacher-learners. Designing effective professional learning for the purpose of supporting teachers in their own classroom design assumes professional learning providers are knowledgeable about the content of blended learning as it applies to student learners, as well as how to engage adults who are new to the process of designing that learning.

Design thinking. Design thinking (Dam & Siang, 2019) provides a structure that grounds the designer of learning in what is ultimately a personalized experience by explicitly seeking to understand the intended audience more fully. Moving to blended

learning, or any other new pedagogical model, marks a willingness to challenge current assumptions. Design thinking provides a series of steps that unfold and spiral back on one another in order to guide the designer through a process to think through an end user's experience fully. Professional learning that is blended to personalize the learning experience requires the same level of autonomy on the part of the professional learning providers as that of teachers in any classroom. The process outlined in design thinking provides structures that intentionally challenge assumptions and preconceived notions. The experience allows teachers to exercise autonomy regarding whether or not the new practices will become a regular practice that is congruent with their beliefs and values. Designers of professional learning about blended learning decide what content will be online and what content will be face-to-face, where students will engage in choice, how students will navigate cognitive dissonance, and what practices will build self-regulation.

Designing online learning. Instructional design practices for blended learning include practices of course design that may be new to teachers of traditional classroom settings. The term "instructional design" may even be new to educators as it refers specifically to the design of online content versus the more pedagogical definition that is commonly used in education. Any time students engage with an online component of their learning experience, someone has used principles of instructional design (either well or poorly and consciously or unconsciously) in a way that influences the quality of that interaction. Cheung, Lam, Lau, and Shim (2010) clarified this concept by suggesting instructional design practices such as creating a course overview, redesigning the lesson plan, preparing the lesson materials, performing research and preparing resources,

incorporating into the LMS (adding resources to the online platform), and reviewing the created lesson and materials as core components.

Though simple on the surface, using and creating in a digital platform creates challenges for the teacher or professional learning provider who is new to blended learning. For instance, if a teacher or professional learning provider has never considered how to ensure online content meets accessibility standards, this additional layer can present a challenge (W3c_wai, n.d.). Support structures such as workshops and coaching are important in teachers' development of the skills necessary to design and facilitate blended learning (Lock & Johnson, 2017). Designing online content, or instructional design, is not commonly taught to pre-service teachers, nor to practicing teachers, yet it is increasingly demanded of them (Luo, Murray, & Crompton, 2017).

Designing for blended content and experiences. Blended learning is a holistic process. In their meta-analysis, Bliuc, Goodyear, and Ellis (2007) articulated the need for an examination of more than just the parts of blended learning. Blended learning involves a face-to-face learning experience and a digital learning experience that are meaningfully connected. Attempts to research blended learning often end up focusing either on specific components of methodology or on only the digital technology integration (Bliuc et al., 2007). Studies with a broader focus on the full experience are needed.

Some studies, however, revealed insights that connect blended learning design to autonomy. Lai, Lam, and Lim (2016) outlined two major principles in blended learning design with implications for the integration of face-to-face and online experiences. The principles of extension and consolidation guided this work. For example, a blended

learning approach should afford students opportunities to bring the learning together in a meaningful way, or periodically consolidate and synthesize for meaning. Likewise, students might have opportunities to expand on their learning in ways that are not pre-determined by the teachers. Additional elements such as student autonomy, interaction, and feedback, as well as awareness of student diversity, specify more concrete practices that weave together the experience students have in a blended learning environment following these principles. Personalization is more intentionally included in this expanded definition, demonstrating the interconnectedness of blended and personalized learning.

Complex models have been built to provide instructional designers with road maps for successful course design. Picciano (2009) proposed a blending with purpose, multimodal model to assist in the design of blended learning to meet students' varying needs. This model included the following components: content, social and emotional development, dialectic/questioning, synthesis/evaluation, collaboration/student-generated content, and reflection. These guideposts add clarity to the process of personalizing the experience (or allowing students to personalize for themselves) beyond that of only determining the balance of online and face-to-face learning experiences.

Navigating the role of choice. Choice becomes an essential component of autonomy-supportive environments (Ryan & Deci, 2017), and "autonomy is the quality of owning one's actions and making action choices that are integrated with the self and serve the needs for competence, relatedness, or both" (Little et al., 2002, p. 392). Having choice and cognitively processing and endorsing one's choice is therefore essential in the process of developing autonomy and overall psychological well-being. Little et al.

echoed Deci's (1995) emphasis that choice is a requirement for both agency and self-regulation. In a study by Patall, Cooper, and Wynn (2010), the positive relationship between choice and student perception of autonomy support/intrinsic motivation was clear, specifically in the application of homework. However, choice in and of itself was not always found to make a difference: "Choices need to be relevant to students' interests and goals, provide a moderate number of options of an intermediate level of complexity, and be congruent with other family and cultural values in order to effectively support motivation" (Patall et al., 2010, p. 898). Designers shape the perception of choice, and would be wise to weigh the authenticity of those choices at every turn.

In a phenomenological study, Flowerday and Schraw (2000) articulated a model for examining teacher beliefs about choice that included types, criteria, and rationale for choice. Flowerday and Schraw suggested more research was needed to better understand the relationship between how educators use choice in their classrooms and their own self-efficacy. For teachers, the notion of designing for choice means giving up control in their context. Understanding the complexity embedded in choice allows for an examination of practices to move beyond providing different options.

By exploring the nature of choice, the concept of interest has become increasingly interwoven in the discussion. In continued research, Flowerday explored the differences among choice, situational interest, and topic interest (Flowerday, Schraw, & Stevens, 2004; Flowerday & Shell, 2015). Though *topic interest* is content-specific and fairly stable, *situational interest* is "spontaneous, transitory and environmentally activated . . . [and] appears to arise from novelty, curiosity, or salient informational content" (Flowerday & Shell, 2015, p. 135). She indicated that choice did not necessarily affect

attitude, but situational and topical interest did. In designing for autonomy, paying attention to choices that connect to topic and situational interest is valuable. What matters to the one doing the choosing, therefore, is as important as the act of providing choice. Consulting the learners before designing an activity that includes choice is a process that attends to autonomy. Ryan and Deci (2017) also connected interest and emotion to the development of autonomy in self-determination, fueled by John Dewey's "functionalist perspective on behavior, within which he posited a primary role of interest in the development of mind and culture" (p. 104).

In addition to the layer of topic interest and situational interest, the sheer number of choices can affect the learning experience. For example, some students might have a choice between reading two passages, or a menu of 30 topics of study to explore. Maimaran (2017) acknowledged the importance of choice for younger students and sought to uncover the effect of assortment size on engagement and intrinsic motivation. Though Maimaran's research focused on early childhood students, the results are noteworthy—though students preferred to choose from large sets of books, they actually spent more time reading and engaged with the book when they made their choices from a smaller set. In his research, B. Schwartz (2009) shared similar findings about choice in education, both at the school choice level but also in terms of intrinsic motivation. He described how too much choice affects humans in general, stating, "Beyond paralysis and impaired performance, large choice sets seem to undermine the satisfaction one gets from a decision" (p. 397). In designing learning experiences, it follows that the right quantity of choice matters as much as the type of choices provided.

Koh (2014) studied the topic of choice overload at the university level. Like Maimaran (2017), Koh was interested in learning more about choice quantity. Koh examined the role of self-regulated learning strategies in navigating excessive choice in order to extend upon and subsequently challenge the choice overload hypothesis outlined in Iyengar and Lepper's (2000) study. In their study, Iyengar and Lepper posited that there is a tipping point at which too much choice actually has a negative effect on the intrinsic motivation of learners. In their original study, they had participants choose one of 30 or one of six different course assignments. In Koh's study, replicating the aforementioned study, intrinsic motivation was actually higher with more choice. The number 30 was determined to be excessive in the original study, though it did not prove to be excessive when replicated. Koh noted characteristics that might explain the difference in how choice was perceived in his study: "(a) task characteristics, (b) equivalence of difficulty in choosing a set of course idea, and (c) the sample" (p. 26). The perception of excessive choice could be dependent on several factors, but most importantly, how numerous those choices are perceived by the students.

Choice in blended learning. Several considerations around choice propel the research on blended learning to include models that examine choice from a blended learning perspective. Horn et al. (2015) outlined models of blended learning that have differing levels of choice embedded in the structure itself. Models such as individual rotation are intended to be a structure that promotes choice. In this model, students engage in self-reflection around progress toward their learning goals and determine what they need to move toward mastery of the content. They use guidelines such as "playlists" to help them make decisions about what they must do and what they may do to reach

those goals. This allows the teacher to have some control of the learning experience and the ability to confer with students at different checkpoints.

Blankson, Godwyll, and Awaleh (2013) proposed what they called the hyflex model, a new model for blended learning to enhance student choice at the university level. This focused more on process choices around the mode of learning that students prefer:

> The instructor provides the structure, content, and learning activities for each class or each topic and the student is given the freedom to choose, individually, whether they will participate in each class activity either in an online or traditional face-to-face environment. (p. 245)

The definition of the hyflex model is grounded in the idea that when students have the agency to choose how they will learn, the learning will be more meaningful and personally satisfying. Though focused on the university setting, elements of the model demonstrate how the inclusion of student autonomy can apply at a structural level of design. University students indicated that flexibility, weather conditions, and convenience played an important role in the decisions they made. Adult learners engaged in professional learning also may have the freedom to engage in this kind of structure, even though their students in K-12 may not have the structure in place.

Navigating cognitive dissonance, uncertainty, and teacher efficacy doubts. Festinger (1957) described *cognitive dissonance* as the tension or feeling of inconsistency among conditions (attitudes, beliefs, values, and opinions). Cognitive dissonance is part of the learning process. Knowing that the tendency is to reduce cognitive dissonance, professional learning providers must decide how they will navigate these moments with

participants. Designing for and implementing professional learning that requires change means recognizing teachers' perceptions of risk (Ince, 2017). Particular risks for an adult learner and teacher include being a student, submitting work, engaging in discussions, and attending lectures with colleagues. These risks are perceived both on a professional and personal level (Ince, 2017). In the instance of blended learning, teachers take on an additional risk of experiencing all of the learning in potentially a vastly different context than what they experienced in the past as students, increasing the level of unfamiliarity. In addition, when designing for autonomy, choice is a key element. Uncertainty is a natural component of choice. Exploring how uncertainty manifests as a teacher provides insight into the experience students will encounter as they grapple with new content: "Becoming comfortable with uncertainty and doubt helps teachers model the kind of thinking that is characteristic of experts in the subject matter disciplines" (Wheatley, 2002, p. 13).

Facilitators who can recognize sources of potential incongruence for participants can design for them. Gorski (2009) highlighted the explicit teaching of cognitive dissonance as a way to stay engaged in conversations when there is an emotional or cognitive reaction that would otherwise stop the conversation. Critical questions, intentional reflection processes, and the ability to use specific incidents of cognitive dissonance as points for deeper discussion provide ways to resolve learning dissonance (Ince, 2017). Mezirow's (1997) transformative learning theory revealed the importance of challenging assumptions for making major changes in worldview:

> To become meaningful, learning requires that new information be incorporated by the learner into an already well-developed symbolic frame of reference, an active

process involving thought, feelings, and disposition. The learner may also have to be helped to transform his or her frame of reference to fully understand the experience. (p. 10)

For instance, a disorienting dilemma coupled with a supportive environment can be a way to help navigate change. Facilitators of professional learning have increased their responsibility to recognize cognitive dissonance: "Cognitive dissonance is also experienced by participants in planned and unplanned incidents leading to increased risk for learning if facilitators are unable to recognise, identify and manage cognitive dissonance as an educative resource and associated risks" (Ince, 2017, p. 195). In her study, Ince explored the facilitator's role in navigating cognitive dissonance and learner risk. In Figure 7, it is the moments of facilitators' critical observations of what is going on with participants that create a series of decision points for the facilitator.

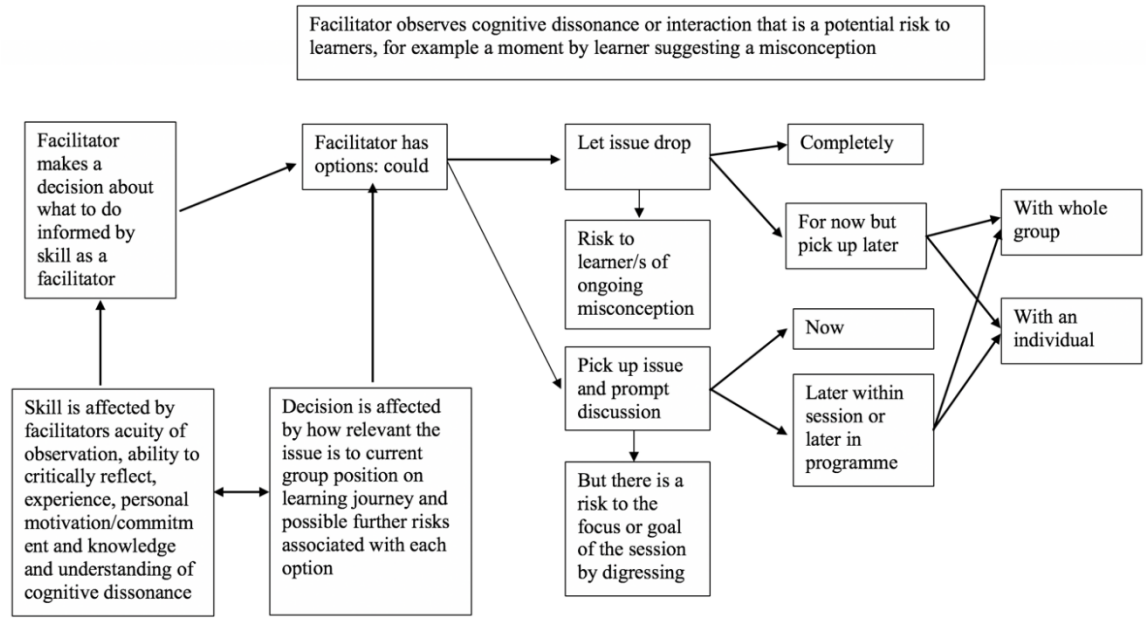


Figure 7. Decision-making process by the facilitator in managing risks to learning (Ince, 2017, p. 208).

Noticing cognitive dissonance is as key for the facilitator as it is for the learners themselves. Pedder and Opfer (2013) stated that "becoming aware of inconsistencies between values and practices may motivate teachers to learn" (p. 544). Wheatley (2002) described the potential benefits of teacher efficacy doubts to explore the notion of incongruence more fully. Disequilibrium and uncertainty about current teaching practices can facilitate deep self-reflection that can cause transformational change. According to Wheatley, teacher efficacy doubts can be powerful in (a) fostering disequilibrium and chance, (b) fostering reflection, (c) supporting the motivation to learn, (d) supporting a response to diversity, and (e) fostering productive collaboration.

Self-regulation. If purposeful external disequilibrium is on one end of a regulation spectrum, then purposeful internal self-regulation might be on the other. Broadbent (2017) described a *self-regulated learner* as an individual who is motivated, persistent, manages time effectively, and seeks assistance when necessary. A self-regulated learner can plan, set goals, and engage in strategies to achieve a goal. In essence, a self-regulated learner can entertain uncertainty and use it to determine next steps. Becoming self-regulated does not mean it is a solitary process. This connects to an often-misunderstood component of autonomy in SDT, which is that independence and autonomy are the same (Deci & Ryan, 2002). Independence includes a non-reliance on others. For example, a learner working independently is working alone without the assistance of others. A learner exercising autonomy would endorse his or her own goals, which might include either working alone or working with others. Self-regulated learning pedagogy is intended to assist learners with self-regulation, not with becoming entirely independent.

McQuirter Scott and Meeussen (2017) emphasized the shift required to move students to take control of their own learning in order to succeed in a blended learning environment. This shift to self-regulated learning requires a shift in traditional control structures in the classroom and in professional learning settings. They noted:

> Today's students need skills to access information quickly, to make decisions about how to use and interpret the vast amounts of data available on the Internet, and to create digital products that can be shared with wide audiences. These complex tasks are most often done in collaboration with peers so the teacher is left guiding or coaching but not directing the nature of the learning. (p. 659)

Structural decisions around blended learning support the process of becoming a more self-directed learner.

Van Laer and Elen (2017) articulated some of the challenges that a blended learning environment presents to learners' self-regulation and recommended seven attributes that are essential in a blended learning environment that supports self-regulation: (a) authenticity, (b) personalization, (c) learner control, (d) scaffolding, (e) interaction, (f) reflection cues, and (g) calibration cues. To describe behaviors that promote self-regulated learning, McQuirter Scott and Meeussen (2017) outlined six conditions: explicit training in metacognitive strategies, positive teacher–child interactions, longer and sustained interventions by teachers, small-group learning and the teaching of collaborative skills, strong motivation for the learning task, and a high level of organization in the classroom. Questions such as "How will you show me your learning?" change the dynamic of who originates the learning, the goal, and the mastery.

Summary

Designing for autonomy in a blended environment for teachers simultaneously facilitates navigating multiple aspects of learners' experience. According to Rubin and Sanford (2018), differentiation, pacing, and agency drive the choices around blended learning structures. Initial design decisions are used to address when, how, and what content should use digital technology, and when, how and what content works most effectively face-to-face. Professional learning designers will also make decisions about how much choice will appear in the instructional design with adult learners. Additionally, facilitators must be keenly tuned to what unfolds during the experience and respond to those unscripted moments to increase the opportunity for the learners to integrate the new ideas. The evolution of the practices associated with blended learning demonstrate a path of increasing clarity and nuance (Güzer & Caner, 2014). Professional learning for teachers about blended learning opens up a dialogue concerning the implications of new pedagogical models for learners and teacher efficacy.

Equity pause #6. During this equity pause, I am challenged to examine who contributes to the conversation in the blended learning research space. As I bring awareness of who I am to this research, I must take note of who else is contributing to the discussion. I am inspired by the goal of blended learning to interrupt processes that make access to educational experiences and information reserved only for the few. I believe blended learning helps increase access to information and other experts in the world for all people. I also acknowledge that no single reform has successfully eliminated the inequities of access to high-quality teaching that stem from deeply rooted biases or firmly held beliefs. I struggled to find much literature explicitly from the experience of teachers

of color who are shifting from traditional to blended or personalized learning. My hope is that as the research base grows, more voices from researchers of color will fill the space. I have an obligation to continue to seek out the voices of teachers of color, as well as coaches of color, to amplify their voices and experiences with blended learning so the research continues to grow to reflect a depth of perspective on the topic.

V. PHASE IV: IDEATION

The ideation phase helps the designer engage in a process to open the door to a world of possibilities, solutions, and experiences that will allow for alternative ways of viewing the problem that has grown from the notice, empathize, and define phases. It is in this phase that epistemological beliefs, methodology, and method are harnessed by the researcher to structure a process to explore the problem space in a way that intentionally expands beyond preconceived assumptions or expectations (Dam & Siang, 2019).

Research Design

This research was designed as a journey through the equity-centered design thinking process. It included an invitation into the messy, challenging, emotional, and thought-provoking experience of members of a team providing a professional learning experience for K-12 teachers. Qualitative methods "describe the common meaning for several individuals of their lived experiences of a concept or phenomenon" (Creswell, 2013, p. 76). In this study, I described how technology design coaches brought consciousness to the experience of designing for autonomy in a blended learning environment. The focus of this study was consciously situated as an ironic impossibility—one designing for autonomy for another—as this was the challenge for these professional learning leaders and what was asked of the teachers in the course. This challenge is not futile and presents an opportunity to think differently.

Engaging in post-structural thinking valued the constant evolution and iteration that existed in the very human process of designing for other humans' experience. Lather (2007) connected me to post-structural theory when she said:

> It is what seems impossible from the vantage point of our present regimes of meaning that is the between space of any knowing that will make a difference in the expansion in social justice and the canons of value toward which we aspire. (p. 16)

The design experience of the three technology design coaches revealed surprising insights expressed in flashes of realization, informal discussions, and moments of emotional reflection during the times when we spoke formally and as the words from the experience and observations marinated in my reflective journal. I followed a non-linear process of reflection and exploration of the lived experience of these individuals, looping back to words that were used during design and implementation (Vagle & Hofsess, 2016). I listened and watched closely for opportunities to follow "lines of flight" as Deleuze and Guattari might articulate (A. Jackson & Mazzei, 2012) that come from experiencing the phenomenon of design from an open stance, or a beginner's mind (Gordon-Graham, 2014).

Post-Intentional Phenomenology

A post-intentional phenomenological lens (Vagle, 2014) provided a research framework congruent with my own epistemological beliefs in understanding and applying specific tenets of the qualitative approach: "It is the task of phenomenology. . . to make us conscious of what the world was like before we learned how to see it" (p. 40). It is essential to explore the inner worlds of the participants experiencing the phenomenon (Marton, 1986). Therefore, I engaged participants in a dialogic process to provide a method by which they could reflect freely without the expectation that they should have already determined the meaning behind their experiences.

In qualitative research, the design itself is flexible (Bloomberg & Volpe, 2016). Therefore, strategies for data gathering and analysis changed as a result of how the data presented in pursuing questions that unfolded in unpredictable ways. I opened myself to the possibility that even the intended research phenomenon could shift, as "The unanticipated, the serendipitous, and fortuitous—the accidental—are or can be just as important in the conduct of qualitative research as the intentional and the rational, perhaps even more so" (Waite, 2014, p. 274).

Intentionality refers to what Vagle and Hofsess (2016) described as the in-between spaces where people "find-themselves-intentionally-in relations with others in the world . . . [These] spaces are not objects that can be poked and prodded . . . They must be philosophized—conceptualized, discussed, opened up, and contemplated" (p. 336). The technology design coaches navigated ideas with one another, with their participants, and with the meta-structure imposed upon them via requirements from another department. It was in this context that deconstruction served as "both a method to interrupt binary logic through practices of reversal and displacement, and an antimethod that is more of an ontological claim" (Lather, 2007, p. 5).

Resisting the urge to settle into a framework of universal meaning or implication was both a practice in which to engage and also essential in order to hear the hidden meanings within the experience itself. The design thinking process provided a vehicle that allowed me to both get in the way of the data and get out of the way of the data in order to express my analytical voice when needed, while still allowing for my interpretation of the data from the participants to guide that dance (Lather, 2007).

According to Vagle (2014), "Phenomenologists use the word intentionality to mean the inseparable connectedness between subjects (that is, human beings) and objects (that is, all other things, animate and inanimate, and ideas) in the world" (p. 27). This connectedness requires an examination of the traditional view of a phenomenologist as separate from the participants of a study. Challenging the concept of "bracketing," this position allows and even seeks to trouble the data in between (Lather, 2007).

Vagle (2014) adopted the term "bridling" to describe the phenomenological evolution of bracketing to demonstrate the difference between the researcher's relationships to the data. *Bracketing* is a more common phenomenological term that refers to stepping outside oneself (also referred to as the epoché) and is experienced as "deranged astonishment or distracted wonder: reseeding the world ecstatically through the (re)turning and refocusing of the phenomenological glance to the world as lived" (van Manen, 2016, p. 188). To methodologically embrace the idea of a complete separation and also adhere to a belief about the researcher's inevitable role in perceiving the phenomenon, the evolution of bracketing to the related bridling allows for a process that aligned with my own theoretical framework. *Bridling* was described by Dahlberg, Dahlberg, and Nystrom (2008) and arose from Dahlberg's lived experience on a horse ranch. For Dahlberg, bridling does two things:

> First, bridling involves the essence of bracketing in that pre-understandings are restrained so they do not limit openness. Second, bridling is an active project in which one continually tends toward the understanding of the phenomenon as a whole throughout the study. (Vagle, 2014, p. 67)

This reflective stance is essential to remain open to surprise and wonder and acknowledges the researcher's role as the one who perceives. I adopted this shift to bridling in the data collection and analysis process for this study.

The three technology design coaches contributed to the research by reflecting on their experience and answering questions, as well by exploring questions that arose for them as the dialogue unfolded. My role as researcher was paramount in this study. This phenomenological approach was chosen intentionally with a post-structural, or post-intentional lens (DeWalt & DeWalt, 2011). As a unique inside observer of the design process and implementation of the professional learning, I shared my perceptions with participants, which guided our collective understanding.

I initially shared my reflections after at least a day had passed after any interview session, and my positionality of supervisor, though formally set aside, was present nonetheless. Feedback and iteration require an open sharing of ideas, and is a regular practice on our team. As I embraced my role as researcher, I was hyper-focused on being an active listener. I watched as the technology design coaches tried to make sense of what they thought I was thinking. I realized that my position of power as the director carved space for my voice even when I wanted to be a more passive observer. It made me conscious of how even the most empowered members of my team were still determining whether their voices would be valued. I noticed that my withholding feedback proved to cause more of a disruption to the flow of ideas shared in conversations than did silence. In order for this qualitative study to capture a complete experience, it meant that the technology design coaches' interactions with me throughout the journey were an element I could not ignore. Through our intentional relationships,

we explored the implications of the meaning they were making on their next design and uncovered experiential moves that did not yet have labels, yet were clearly worth considering in future professional learning.

Participant Selection

The three technology design coaches were selected purposively as known individuals who would "be able to provide a thorough and rich description of the phenomenon, who will collectively represent the range of multiple, partial, and varied contexts" (Vagle, 2014, p.128). Convenience sampling was necessary to match the experience to the unique context of a collaboratively designed learning experience around blended learning (Creswell, 2013). All of the technology design coaches were currently working with teachers on a daily basis through job-embedded coaching as well as leading formalized professional learning through a program called "Leadership Pathways." The meta-structure of Leadership Pathways was launched by the school district in 2017 to offer teachers one of three professional pathways to complete over the course of 2 years, with the promise of an increase to their base salary as they completed each semester (or micro-credential) along the way. The pathway offerings were Transformative Technology, Literacy, and Social and Emotional Learning.

The technology design coaches were selected to lead the effort for the Transformative Technology Pathway. They were, in effect, the leaders of several cohorts of teachers, or communities of practice (Lave & Wenger, 1991). These three coaches were currently designers and facilitators of a blended professional learning that took place over several years with the same teacher-participants. This structure met Lave and

Wenger's (1991) definition of a community of practice in that the three necessary elements were present:

- Domain (area of interest): Teachers elected to participate in this professional learning pathway to increase their use of transformational technology.
- A community (people who actively engage in activities or discussions): Teachers met regularly both face-to-face and online, both synchronously and asynchronously.
- Practice (people who are active practitioners in their area of interest): All of the teachers were actively teaching at their campuses throughout their engagement in the professional learning.

During the data gathering and analysis phase of this study, the technology design coaches were finishing the second year of designing and facilitating this blended learning experience. The coaches were purposefully designing to enhance autonomy in their own learning environment as they engaged teachers in the thought process and implementation necessary to effectively use digital technology to blend and personalize the learning environment for students. Inspired by the idea of the "four-corners problem" as outlined by Waite (2014), the use of three different perspectives around the same phenomenon provides a more accurate depiction of the phenomenon of the study, or what is going on. As both the researcher and district-level administrator, I brought an additional layer of interpretation, perspective, and understanding to the study. The intention within this study was not to arrive at an empirical generalization, but to explore the experience of these coaches as they reflected on the process of designing (van Manen, 2016).

The criteria for participants (technology design coaches) were as follows:

- Actively engaged in designing and facilitating a blended learning professional learning experience;
- Had a minimum of 5 years of classroom teaching experience prior to becoming a coach; and
- Self-identified as purposefully designing for autonomy in blended learning experiences for participants.

The three technology design coaches were all Anglo women between the ages of 35 and 45. All were formal and informal leaders on a team of 20 and represented varied teaching backgrounds in both grade level and content. Their opportunity within a bigger context permitting them to design and implement ongoing and recursive professional learning as a team over the course of 2 years made their journey particularly unique.

My role and positionality as the Director of Technology Integration and direct supervisor of the three coaches was a crucial piece to explore in this research. Lather (2007) reminded me that, "In fact, a sort of common understanding of qualitative work is that the researcher is the instrument, and who you are, and how you are in the world is a huge part of the study" (p. 30). My role provided me a unique window into the thinking and experience of these individuals. My selection of these participants was influenced by convenient access to continual observation of their proven competence in designing and facilitating blended learning, but also because they were naturally reflective professionals (both orally and in writing). The professional relationships we had developed over the last 3 years provided a rich platform for open and honest discussion and reflection. Their participation in this study was completely voluntary and their professional positions were

not affected in any way by their choice to participate. During the course of the study, I stepped away from the formalities and duties of direct evaluation of their job performance in order to fully communicate that their participation in the study would not affect their evaluation or job security.

I was fortunate that my connection to the three participants was consistent and regular as a part of our daily work. The data gathering timeline in Table 1 demonstrates the formal research points in time; however, the authentic conversations and experiences we had in between and with the team at large complemented our day-to-day interactions. The frequency and regularity of our encounters was designed to normalize the research process and provide a level of familiarity and comfort.

Table 1

Data Gathering Timeline

Date	Type	Location
September 13, 2018	Observation of MC #3 Face-to-Face Session	Professional Learning Classroom Space
September 14, 2018	Debrief experience with wider team of 17	Professional Work Space (middle school classroom)
September 19, 2018	Interview #1 with Individual Designers	Professional Work Space (Conference Room)
October 17, 2018	Observation of MC #1 Face-to-Face Session	Professional Learning Classroom Space
October 24, 2018	Interview #2 with Individual Designers	Comfortable home space
January 8 and 9, 2019	Observation of Designing for MC #4	Professional Work Space (open area)
January 17, 2019	Observation/Participation of Online Conference for MC #2	Canvas LMS (virtual)
January 23, 2019	Observation of MC #4 Face-to-Face Session	Professional Learning Classroom Space
February 27, 2019	Observation of MC #2 Face-to-Face Session	Professional Learning Classroom Space
March 13, 2019	Interview #3 with all Designers; Member Checking	Professional Work Space (Conference Room)

Data Analysis Through Data Gathering

Data analysis began the moment the data gathering began. Engaging in phenomenology is a commitment to core components of the craft. Vagle (2014) described the process as looking at what we usually look through:

> It means trying to be profoundly present in our living—to leave no stone unturned; to slow down in order to open up; to dwell with our surroundings amidst the harried pace we may keep; to remain open; to know that there is "never

nothing" going on and we can never grasp all that is going on; and to know that our living is always a never-ending work in progress. (p. 12)

Informal observations began before the study was ever conceived, and the formality of data gathering methods provided additional windows into the experience.

Semi-structured interviews. Over the course of 7 months, from September 2018 to March 2019, I conducted three semi-structured interviews with each technology design coach. The first two were with each of the technology design coaches separately, and the final interview was done collectively. These interviews were audio recorded and transcribed, each lasting from 30 to 45 minutes. I took notes during the interviews to capture words or phrases that struck me as significant (Vagle, 2014).

Coaches were given the choice to engage in additional interviews or to write a lived experience description about a moment when designing for autonomy in a blended learning environment challenged their thinking or the way they had done things in the past. None of the participants chose the writing exercise, as each preferred the comfortable conversational approach during the interviews. Though the technology design coaches, the teachers, the learning design, and I, myself, as researcher were all interesting in their own right, none was a unit of analysis. Rather, the *intentional relationship* among the coaches, the teachers, myself as researcher, and the learning design was the unit of analysis (Vagle, 2014). This further necessitated time to allow the data from multiple voices and experiences to interact, form, and reform over time.

I engaged in a dialogic process as described by Way, Zwier, and Tracy (2015) to encourage deep self-reflection and articulation. By using interview techniques that included probing questions (e.g., "Why do you think that is?"), member reflections (e.g.,

mirroring, calling out incomplete or interrupted thoughts, and reassurance), and counter examples (e.g., asking them to imagine the opposite, magic wand questioning, empathic consideration), I intentionally probed participants to deepen their description of their experience. By bringing specific attention to this dialogic process, I hoped to encourage critical reflections on the part of the participants.

Through our interview conversations, meaning evolved the longer we talked. It was crucial to allow for the coaches to settle into the rhythm of our conversation and not to conclude too quickly, so that statements of certainly had time to linger and possibly change. "We recognize lived experience as constant instability and negotiation of meaning; however, even as we understand that realities are not stable or fixed, we communicate and act in the world as though they are" (Way et al., 2015, p. 721). This interview process was intended to be sensitive enough to catch the fleeting instances of difference, or flashes of newly constructed meaning, that were essential to this study. These are noted in participants' self-questioning, talk repair, and uncertainty.

Observation. Thick, rich description was foundational and rendered in field notes and through observations during blended learning experiences for additional analysis. I conducted several observations of the coaches in their varied professional learning settings, both face-to-face and online. This included their professional work space, an open area in which other coaches also come and go, convene for meetings, and have side conversations; a professional team work space located in a middle school classroom; one of the sites for the professional learning (a black box theatre); a coffee shop (where they often met for designing); an online learning conference (Canvas LMS); and on Twitter (during a Twitter chat they facilitated). Participant-selected artifacts,

including digital artifacts, were used throughout the analysis to enhance and bring life to the study. The LMS, Canvas, was used in this professional learning setting and provided an archive of the learning, participant discussions, and creations.

My field notebook was a constant companion during interviews, observations, my own musings, and the site for my first several passes through the entirety of the data. Reflexivity was a central goal in my note-taking process. Russell and Kelley (2002) described several definitions of reflexivity that had a common theme of the acknowledgement of the researcher's own experience, self-reflection, and co-creation of the knowledge shared in the exploration. Strategies to practice reflexivity include self-reflective diaries and an examination of assumptions and biases and belief systems. My field notebook also served as a post-reflexion journal in which I wrote often throughout the study to capture my wonderings, curiosities, and experiences (Vagle, 2014). Within this journal, I constructed my own personal "initial post-reflexion statement," which I revisited and rewrote often to help me examine my own assumptions, as doing so "gives you a better chance of taking hold of them, rather than the assumptions taking hold of you and in turn the phenomenon under investigation" (Vagle, 2014, p. 133). I captured these entries in this notebook after each data gathering event. This process served to provide the connections and insights that are revealed during the equity pauses in this study.

Multiple analyses of the data. A few data analysis assumptions outlined by Vagle (2014) helped to guide the analysis procedure I used. The whole-part-whole analysis process was one of the guiding principles to which I adhered from the start. It is a commitment to the:

> Idea that we must always think about focal meanings (e.g., moments) in relation to the whole (e.g., broader context) from which they are situated—and once we begin to remove parts from one context and put them in dialogue with other parts, we end up creating new analytic wholes that have particular meanings in relation to the phenomenon. (p. 97)

This strategy of analysis helped to ground my decision not to use a computer software program to analyze the phenomenological data. The organic nature of the whole-part-whole process supported the intentional decision on my part to avoid a mechanistic representation and opt for the messier, human-centered experience of design. Through several line-by-line readings of the text generated from interviews, tentative manifestations began to emerge. This expansive approach to data is embodied in the ideation phase of the design thinking process.

Vagle (2014) suggested three other commitments that are important in data analysis: "A focus on intention and not subjective experience, a balance among verbatim excerpts, paraphrasing, and my descriptions/interpretations, and an understanding that I am crafting a text—not merely coding, categorizing, making assertions, and reporting" (p. 98). This meant that my own reflections, my direct observations, and verbatim quotes were organized digitally, and I also used a tagging system that allowed me to sort them and view them in different ways. This allowed me to put pieces of data in conversation with other pieces that might not have connected otherwise. The new narratives that emerged from this process were critical in our collective investigation.

I engaged in a consistent activation of my post-reflexion plan. This process was intended to assist me in bridling the lens I currently use to view the world. This is related

to, but a slight departure from, the traditional bracketing term used in phenomenological research. Vagle (2014) strongly suggested employing four strategies during data gathering and analysis, and these served as constant reminders as I observed and listened to the technology design coaches in their multiple environments. I made sure to note:

- Moments in which they/we instinctively connected with what they/we observed, and moments in which they/we instinctively disconnected;
- Our assumptions of normality;
- Our bottom lines—that is, those beliefs, perceptions, perspectives, opinions that we refuse to shed; and
- Moments in which they/we are shocked by what they/we observe (p. 131).

Bringing full attention to these strategies was a constant reminder of my commitment to a bigger network of thought and perceptions. I am inspired by rhizoanalysis, which is not a method but a helpful construct by which to review interview data and observation notes. *Rhizoanalysis*, as described by Deleuze, pulls in the organic imagery of a tree or root system: "There are no points or positions in a rhizome, such as those found in a structure, tree, or [vertical] root. There are only lines" (Deleuze & Guattari, 1987, p. 8). These lines give us a way to see what does not follow a pattern more easily. Borrowing from the key concepts outlined by Deleuze, rhizoanalysis is about reading an assemblage "as it relates to untimely disruption and creates a rupture" (Masny, 2016, p. 669). This metaphor illustrates how the data grow and move like an underground root network, revealing surprising intersections that turn and flower unexpectedly.

I used member checks to share transcripts and data with the participants and included their feedback in the data analysis (Bloomberg & Volpe, 2016). Though I used

some coding to elicit patterns or tentative manifestations, it was a necessary step to uncover the interruptions or outliers in participants' and my experience that broke those patterns. Deleuze and Guattari (1987) demonstrated this important stance in their description of "lines of flight." Vagle (2014) described the process of identifying molar lines (rigid and often binary), molecular lines (which offer some fluidity in relations, but tend back toward structure), and lines of flight (which break through preconceived structures) and "resist the tying down of lived experience and knowledge" (p. 119).

Summary

The biggest challenge in this study was wading through the sheer amount of data that accumulated almost daily for months in a row. The post-intentional phenomenological processes for analyzing data provided a path through the wilderness and encouraged me to activate my own sense of autonomy at times. The analysis resulted in this study, a journey through the equity-centered design thinking process that begins with the act of noticing and then travels through elements essential to the design thinking process, looping and flowing fluidly through steps in a non-linear fashion. My role as a phenomenological researcher was to remain patient, thoughtful, and open to what unfolded by maintaining a strong sense of passion, wonder, and commitment to the unpredictable nature of the process.

Equity pause #7. Much like the way implicit biases present in multiple contexts when a teacher is unaware of unconscious attitudes or stereotypes, I wonder how my own lens might have clouded my ability to recognize normality (Hoffman, 2018). I consciously attempted to remain keenly attuned to moments that presented even a flash of difference, and noted them. This allowed me to return to the moments again and again

and pick at them for hidden biases or assumptions. In the earliest iteration of this study, I recognized my attempt to write myself out of the process. The equity-centered design thinking process forced me to return to my center again and again, and to take a hard look at what it means to be in intentional relations with the study and all the players.

VI. PHASE V: PROTOTYPE

The prototyping phase of the design thinking process relates to the time-bound, real-life observation of the phenomenon under investigation. What does the experience, as seen through the lenses of the define (literature) and iteration (research design) phases, reveal about the phenomenon? Prototypes are developed and shared with the team to determine whether they are to be accepted, improved and re-examined, or rejected based on the users' experience (Dam & Siang, 2019).

Designers' Context and Background

This study was nested in a larger context of an urban central Texas school district's implementation of an incentive-based professional pathways program for teachers. This approach to professional learning is intended to focus teacher leaders in one of three key areas prioritized within the district: transformational technology, social and emotional learning, and literacy. Teachers were given the opportunity through a lottery to commit to one of the three leadership pathways over the course of 2 years. Each pathway consists of four micro-credentials, each of which dives deeply into the district initiative, with continued support over time. Upon completion of each micro-credential, teachers earn points that contribute to an increase in their base salary. Facilitators of the professional pathways are leaders and experts in associated district departments. Figure 8 outlines the process that those enrolling in the experience follow.

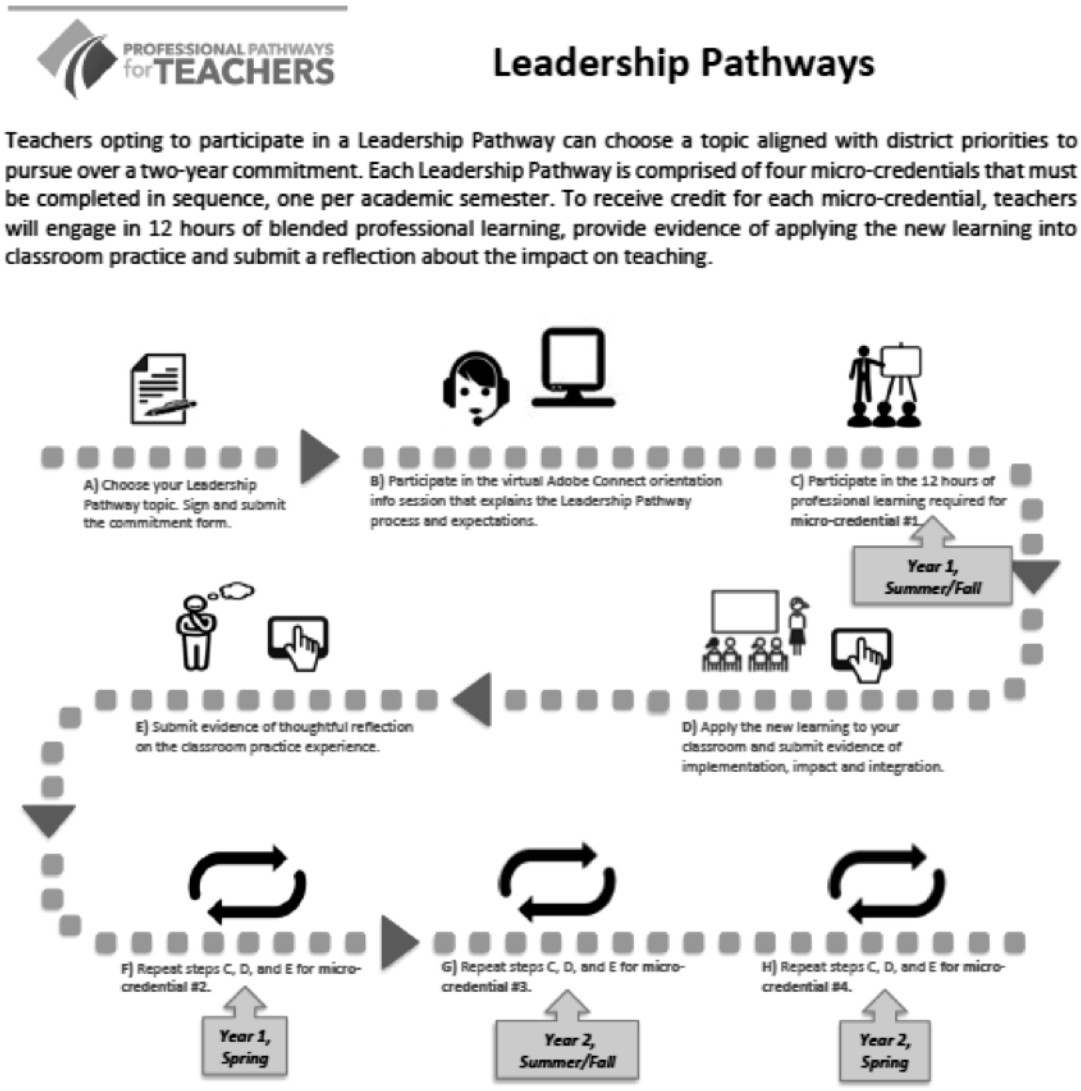


Figure 8. District-defined Leadership Pathways process.

The 2017–2018 school year marked the launch of the Leadership Pathways program. The transformative technology pathway began the first semester with roughly 100 teachers of students from PK to 12th grade. This first experience linked to completing micro-credential one (MC1), "Blended Learning." In the spring semester, teachers engaged in micro-credential two (MC2), "Voice and Choice." The second year marked the launch of micro-credential three (MC3), "Diving Deeper with Blended Learning," while simultaneously, a new cohort of teachers entered the program at the

redesigned MC1. The first cohort of teachers completed the Leadership Pathways program in the spring of 2019 with micro-credential four (MC4), "Blended Learning Leadership."

The three facilitators for the Transformational Technology Leadership Pathway were district-level technology design coaches Karen, Jackie, and Eleanor, who were the participant partners in this study. Pseudonyms were assigned to the participants, and they chose the names themselves. The process of choosing their own pseudonyms proved to be a meaningful experience for the coaches, as they were able to connect to different mentors, family members, or icons who influenced their development as professionals (Allen & Wiles, 2016). The facilitators of the Transformational Technology Leadership Pathway had been in their roles as technology design coaches since the summer of 2016. They took on the challenge of designing the Leadership Pathways their first semester on the job. Not only were they rapidly learning about blended learning themselves, they were charting a course for other teachers to follow. As the director, I wanted to provide a context in which they had the autonomy to own the process of developing something new. These kinds of tasks are not always common in the workplace.

Karen, Eleanor, and Jackie separately shared similar stories as they recalled their own relationships with autonomy. Though all three shared that their own experience of autonomy in school was either limited or nonexistent, only Jackie recalled an experience in school before college that awakened this sense of personal autonomy in learning as designed by a teacher:

> I had complete freedom to research whatever topic I wanted. I remember all my little note cards with my notes of what I wanted to include in my writing and the

> bibliography information. It was a lot, and it was challenging. I felt so empowered to just kind of learn what I wanted to learn. It was really powerful for me. I think it was seventh grade. It is definitely the first time I felt total agency as a student. (Jackie, interview, August 30, 2018)

Both Karen and Eleanor recalled poignant college moments that aligned with their passions. Eleanor was in a narrative writing class in which she was exposed to writings from authors with different backgrounds than her own:

> I still have it saved somewhere because it was meaningful to my personal life. It was something that I enjoyed doing, skill wise, and I got in touch with family members to help create it [the narrative project], too, so it was not just about me. We also were challenged to get feedback from a lot of different people as well, and I feel like we had such control over the outcome of the experience. (Eleanor, interview, August 30, 2018)

Karen was working on her master's degree in college in 2002 when she was in her first role as student teacher. She recognized that she had always been a compliant student and knew how to play the game of school. It was only after her K-12 public education experience that she recognized this shift in herself:

> That was the first time I really recognized the power of, "this is my classroom and this is my ability to make it the best place that I can make it for myself and for my students." I still remember that experience of working with her [my mentor teacher] and developing it, getting tons of feedback. I was trying it out with kids and watching pieces that bombed, then making changes to it. I had the feeling

> that I had the freedom to do that for the first time. (Karen, interview, August 30, 2018)

Jackie, Eleanor, and Karen had all been empowered by a sense of awakening to autonomy. They all went on to become educators who were committed to developing experiences for teachers and students that would replicate that freedom so others might discover autonomy earlier in their learning journeys. Blended learning offered a clear path to this end.

Jackie spoke to how some processes, such as the intentional use of metacognitive strategies such as goal setting and progress monitoring, as well as collaborative tools provided a way to support autonomy regardless of the conventional pressures of standardized testing. Her instinct was to first clarify her opinion that autonomy exists whether we pay attention to it or not:

> I would say students are always autonomous, whether they're being autonomous about the fact that they're choosing to disengage from their learning or to jump into their learning. They have autonomy. So how we design an experience that enhances their learning or not is, I think, a key ingredient. (Jackie, interview, August 30, 2018)

Eleanor echoed this sentiment:

> I see reflection. I think about autonomy and reflection as connected because you can't really make choices to go forward or know yourself as a learner without reflection. So I see teachers purposefully building in reflection as part of the process. I feel choice, but I don't know. I think that's one piece of autonomy, but not the whole picture. I see a lot of choice about products that they make or

> topics that they write about. I see more choice in the humanities than I do in sciences. I also see at standards-based grading schools, kids start charting their progress and being able to articulate where they are, where they want to go. (Eleanor, interview, August 30, 2018)

It was during the moments when the teachers shared their experiments with reflection and choice that the technology design coaches witnessed an increased attention to autonomy beginning to show up in classrooms across the district. When these moments were shared with them, they were sources of great inspiration. They would easily dedicate hours and hours to designing experiences that would encourage even more risk-taking, more autonomy-supporting activities, and more moments when teachers would challenge normative practices in the classroom.

Clarifying the Professional Learning Content

After two sets of interviews and numerous observations, several patterns emerged through an analysis of the stories. The most significant overarching contexts were the interactions during the design process and then the interactions during the actual implementation of the professional learning. Furthermore, I found it necessary to separate the *content* of the learning from the *experience* of designing for that content. In order to examine the interactions in the study, it became clear that the objects needed to be defined: "Human action occurs as a result of the interpretation of the objects involved. The objects are attributed a specific meaning, and this is not a purely individual process but one that occurs in interaction with others" (van den Berg, 2002, p. 582). I discovered that the experience of designing included a constant revisiting of the coaches' shared definition of outcomes of the professional learning experience and the content itself. The

coaches constantly negotiated the content or the objectives they wanted to model. Those choices ultimately influenced their experience. The content provided a road map for the participants and allowed the coaches to focus on specific components in more depth.

The content of the four domains of blended and personalized learning as outlined by the Highlander Institute are (a) classroom culture; (b) interest, identity, and agency; (c) differentiation; and (d) rigor and mastery (Rubin & Sandford, 2018). These domains represent the content that the Transformative Technology Leadership Pathway cohorts explored throughout each micro-credential. This content was underpinned by the designers' intent to provide an authentic experience to promote autonomy. Though each face-to-face and online learning session had a set of clearly identified learning goals, it became clear that the coaches described some hidden or more implicit goals that were revealed through dialogue and conversation.

For Karen, Jackie, and Eleanor, the key to supporting teacher autonomy in a blended environment meant that the teacher-participants needed to experience effective structures (e.g., physical space, choice, schedule sequence and speed, protocols, framing of context), flexibility (e.g., feedback, pace, response to real time concerns or questions), the cultivation of an-autonomy-supportive classroom culture (e.g., safety, empowerment, vulnerability, self-regulation), and alignment (e.g., clear outcomes, clear limitations or boundaries, scope, strategies) in order to adopt and apply the blended and personalized learning domains with their students in the classroom. These goals were continually expressed in the technology design coaches' descriptions as they talked about the intent of their design choices.

Research Question 1 (What does it mean to make space for autonomy in a blended learning environment?) opened up an important distinction. Both the design process and the implementation process contributed to and provided insight into how to intentionally create space for autonomy. Structure, flexibility, cultivation, and alignment were themes that emerged as necessary to fully understand how the complexities of blended learning feel to the learner. Considering these key content goals that Karen, Eleanor, and Jackie wanted to ensure that teachers would both understand and experience, they had to reflect on and design for how their actions would model effective predictable structures, cultivation of an autonomy-supportive classroom culture, flexibility, and alignment at every turn. These concepts provided anchors for design conversations, and sources of deep discussion and debate about how to make decisions. The following is a summary of how the coaches interpreted these key concepts.

Predictable structures. Models of blended learning provide clear structures in routine that, when followed, have implications for grouping, pace, and the sequence of learning. Predictable routines guide what major experiences the learner will have first, second, third, and beyond, as well as whether the experiences can happen in any order or if an individual has an individually determined timeline (Drysdale et al., 2013; Horn et al., 2015; Rubin & Sanford, 2018). The coaches were surprised by how increasing some routines actually allowed for more freedom and comfort when navigating autonomy. Blended learning models such as station rotation and scheduled seminars with predictable times changed the perception of time and engagement for the coaches, as well as the comfort teachers felt when exploring ideas within this organizational structure. Jackie described this phenomenon:

> The participants are scheduled to come speak to me. I think about 15 or 20 minutes. It went the full time every time. I wasn't surprised by that, but I thought we'd have a little bit of downtime between seminars. It makes time go by ridiculously fast every single time. I think it's just because you're really immersed in the experience and engaged in it. The conversations are happening. If you're facilitating the conversations, then obviously they are happening, but even when you're not, you're hopping around from person to person, answering questions, getting into deep conversations. You know they want to talk right now. They don't typically have a question that is a yes or a no, and it's typically like they are trying to figure this out, "I'm thinking this, I'm thinking that." They don't even have a question. So you're like, "OK, well, tell me about this, tell me about that." And you end up having some very deep, rich conversations.

The physical space can provide a structure as to how the room is arranged to support different learning experiences. This may include a physical space with different areas to communicate that there will be opportunities to move and that movement may be fueled by choice. It also is a space where different numbers of participants can gather, which demonstrates that there will be conversation with others. During one of the sessions that repeated, the content was the same, but the physical space was different. In one space, the coaches had the ability to use a corner of the room with bean bags for a collaborative task. On the other day, for the same activity, they had access to some bleacher-like seating in a theatre room. The coaches shared that the collaboration was much more successful with the bean bags than the stairs (field notes, September 14, 2018). Navigating between the physical space and virtual or online space also allows for

new structures to bind the experience together and provide sites for engagement (Thibaut, Curwood, Carvalho, & Simpson, 2015).

Finally, attending to language is a way to add structure to the learning experience. Facilitators can use language that supports autonomy by way of carefully crafted questions, clearly written directions, or planned opportunities for structured dialogue by the teacher-participants. Clearly articulated logistics and instructions provide a structure for developing shared expectations, which gives participants a vision for how they might progress through their own learning journey. Using protocols to give teachers the opportunity to make sense of what was required of them provided a way for them to bring their own voices into the professional learning experience. This provided a way for both facilitators and teacher-participants to clarify, elaborate, or interpret information tended to assist with deeper understanding of the content (Pena-Shaff & Altman, 2015). Feedback in these moments guided many decisions about future implementation.

Cultivating an autonomy-supportive classroom culture. In order to cultivate something, it has to be something so valued that it pervades over time. In order to build autonomy-supportive routines for blended learning, the coaches used methods that would consistently empower their teacher-participants. Participants knew that when they were in this learning space, the coaches would always push them to make choices about where they would sit, who they might talk to, and how they would share their learning. The designers sought ways to continually develop opportunities for the teachers to exercise their choice and feel confident in doing so. The coaches would celebrate when a participant decided to stay in a particular place or seek out a colleague when the rest of the group was doing something differently. It was an indication that participants were

feeling comfortable enough to do what was best to deepen their understanding in that moment. The coaches wanted to demonstrate the creation of a space where no matter who you are and what your experiences are, all thoughts and ideas are valued and necessary (Hadar & Benish, 2019; Hu & Zhang, 2017; Ryan & Deci, 2006). This meant that when eliciting voices from teachers, the response needed to demonstrate an open kindness and willingness to hear. Even in a moment when I knew a teacher-participant comment demonstrated a belief contrary to one held by Eleanor, she nodded and moved into a questioning stance, probing more rather than showing disdain or frustration (field notes, January 23, 2019). This demonstrated a commitment to empathy first and foremost.

The coaches found that by purposefully modeling vulnerability, they were demonstrating expectations for how they hoped the group would behave. They modeled vulnerability about what they thought they knew and what they did not yet know, and genuinely being open to interrupting current thinking in order to let in new ideas. Demonstrating this as a facilitator is a rare occurrence in my experience, but a refreshing one that has powerful implications for developing more authentic relationships as well as a path to be comfortable or even brave in an atmosphere of risk (Hooks, 2014). Vulnerability models a shift in conventional power structures in a classroom where the instructor is presumed to have all the answers (Ozmet, 2018). Psychological safety is also built over time. Again, by modeling stumbles, missteps, and their own discarded beliefs, the facilitators wanted to give participants permission to open up to the possibility that they might also uncover beliefs that did not serve them anymore. Changing your mind is a valuable part of the process.

Flexibility. Flexibility requires a constant demonstration of being hyper-attuned to your audience. Karen, Jackie, and Eleanor wanted to ensure they were responding to feedback in real time during their face-to-face sessions. They had to demonstrate a willingness to change in the moment based on multiple sources of feedback from the participants, whether that was something they learned the day before with another group, something based on a quick pre-survey, or something prompted by an organic discussion that spontaneously demanded the group's attention. The coaches' underlying belief and adherence to the value of teacher reflection as part of the learning process meant that reflections might require change on the part of the coaches' design (Nicolaidou, Karagiorgi, & Petridou, 2018). Empathy with teacher-participants served as a constant guide for making changes in the moment. The coaches were constantly scanning the room and reading the participants' body language to gauge whether they needed to adjust timing or determine an alternate path forward. Eleanor described a moment that demonstrated this flexibility in action that I later wrote about:

> A high school science teacher wanted to know how to use a more sophisticated tool in Canvas. A fourth-grade teacher in the room was using that tool really well already, so Eleanor directed her to this elementary teacher. She wasn't sure how that was going to go, and was nervous. But the design team also had a running joke about Eleanor's matchmaking abilities. It turned out amazing. Both teachers learned something from each other. The structure of the day allowed for unexpected encounters to happen. Natural workshops popped up during the course of the day, because they could. (field notes, January 23, 2019)

Sometimes, it was a single participant who needed individualized attending in the moment, and the design needed to account for the flexibility to meet individual needs.

Alignment. The development of crystal-clear outcomes was one of the most challenging tasks for the designers. They were navigating the external outcomes of the program that were not always written in the way they would have written them, yet they still needed to align the experience to the program goals of the broader Leadership Pathways context, as well as to the outcomes of the learning session underway. They also had to factor in the limitation of the number of hours they had with teacher-participants. The learning goals had to match the scope of each learning session, whether it was a full day, a half-day, or a 1-hour online conference. This alignment was essential to match how they assessed performance and progress throughout the learning. Additionally, the coaches chose which strategies aligned with which type of learning session. Which strategies would be best experienced in a face-to-face session versus which strategies would be better for engaging participants in an online activity differed immensely (Linton, 2018).

Regardless of whether the coaches were structuring, cultivating an autonomy-supportive culture, responding flexibly, or aligning, they promoted change by challenging the assumptions teachers held based on their experiences in the classroom. The addition of digital technology in the learning environment was invigorating for some teachers and a complete inconvenience for others. Over the course of 2 years, teacher-participants were guided to personally evaluate and wrestle with the following: We can support students by designing blended learning by developing an autonomy-supportive classroom culture, engaging student interests and identities, differentiating more quickly and

effectively, and moving toward a sense of true mastery. Designing an experience so the teachers would see value in that effort involved navigating established understandings, beliefs that have been developed over years, different campus circumstances and expectations, and personal biases about education. Exploring the experience of this level of challenge in design unearthed powerful and purposeful design considerations that can contribute to the K-12 professional learning landscape.

Understanding the Learner Experience

As I listened to the coaches' experience and observed the interactions, I wrote in my reflective journal, leaning heavily on SDT for insights. It became more and more clear that the coaches were exploring the terrain of OIT taxonomy of regulatory styles, or an autonomy continuum (Ryan & Deci, 2017, p. 193). As shown in Figure 9, this continuum of motivation, regulatory styles, perceived locus of control, and relevant regulatory processes maps how the coaches' efforts were responsive to both individual and collective location at different points on the continuum.

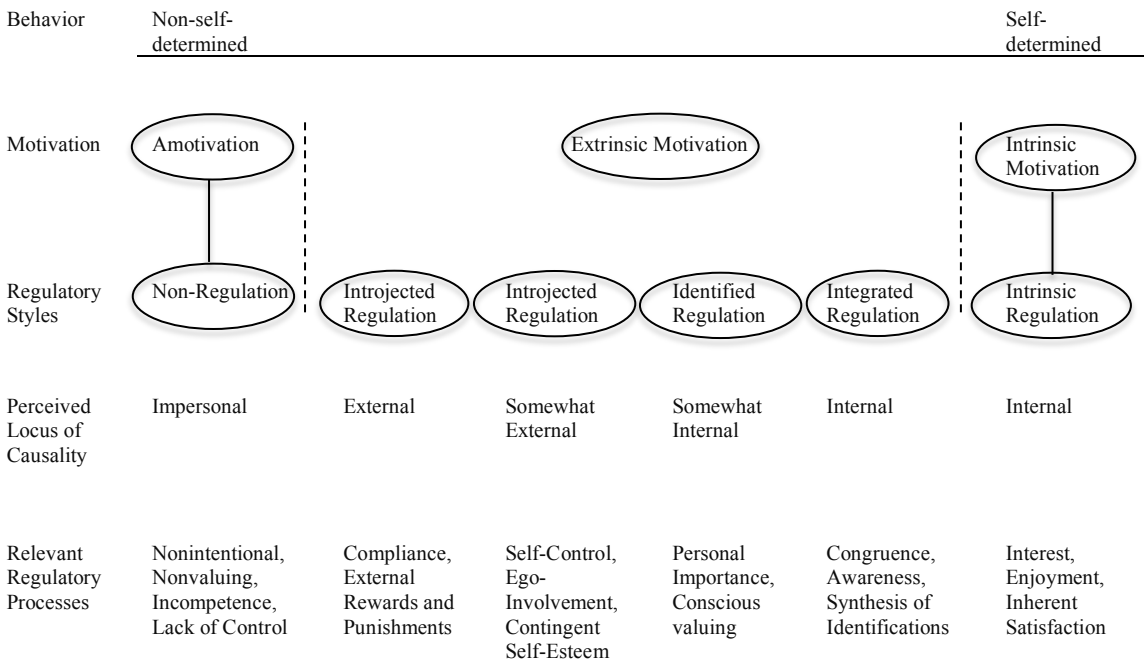


Figure 9. The organismic integration theory (OIT) taxonomy of regulatory styles (Ryan & Deci, 2017, p. 193).

The content of blended learning provided multiple opportunities for teachers to consider how congruent they felt with what they were experiencing and whether it was something they could emulate. On one hand, they had to consider their own level of motivation and on the other they were imagining their students' response and motivation to what they also would design. The teachers were balancing a dose of external motivation to be part of this professional learning. Completion meant they would have an increase in their base salary. Providing a learning experience that inspired more integrated forms of internalization was the goal. The coaches' design was intended to help teachers explore concepts, ideas, and experiences in the most autonomous way possible so the teacher-participants could identify with authentic learning goals they set for themselves and be intrinsically motivated to make a shift in practice. It was during these moments of personal meaning-making and internal evaluation of the experience

that the facilitators' moves would either help or hinder teachers' sense of autonomy. What they did as they responded to the real-time moments revealed how they worked to keep autonomy at the core of the experience.

The Prototype: Tools for Navigating Cognitive Dissonance and Regulation

During the process of interviewing and observing the three technology design coaches, I looked and listened for moments that broke through my own expectations as a researcher and as a director of technology integration. What was happening that made me wonder, "What is going on here?"

In some moments, the buzzing energetic room of teacher-participants would suddenly go quiet, body language would shift, or attention would be collectively directed in a particular way. For some reason, there was an interruption in the flow of energy in the room. Designing for autonomy requires a safe way to allow teachers to challenge assumptions and accurately assess an internal state in order to make a congruent decision about the next step. Everyone in the room—the participants as well as Karen, Jackie, and Eleanor—was navigating this dance between cognitive regulation and dysregulation while attempting to remain in the "zone of proximal development" (Vygotsky, 1934/1962). The *zone of proximal development* is when the "teacher (or the more capable person) targets those functions that are ready to develop within the learner (or the less capable person) with the appropriate support and guidance" (Eun, 2018, p. 23). As facilitators, Karen, Jackie, and Eleanor read the room and responded to the interplay between the content, the process, the teachers, each other, and themselves. The moments of cognitive dissonance expressed ranged from benign questions about logistics to deep, belief-level disruptions. It was during these moments that I noticed something significant

taking place in the space between the design of the professional learning and the implementation of the design. Designing for autonomy required intentional structures, but moderating how challenges to autonomy in real-time would show up was something beyond what one can plan for. It demanded attention and judgement in the moment.

The coaches designed and led countless experiences and activities during each face-to-face and online experience. It was three key design moves, however, that emerged during moments when they knew learning would become challenging, either cognitively or in the moment, that struck me. Whether designing intentionally for cognitive dissonance or navigating through their own challenged assumptions, the coaches used these moments to activate the unique skills they refined as a result of working together. I initially named these skills after tools: the *level*, the *turnbuckle*, and the *scoring tool*. These skills showed up repeatedly in the coaches' design meetings, they were articulated in the interviews, and I saw what they looked like in action during the professional learning sessions. They became what I saw as design tools that sharpened over time.

In order to determine whether these skill moves resonated with the coaches in conscious consideration, I was inspired to use metaphors of actual tools that perform a similar function to what I both observed and heard them describe. The coaches' experiences were so interwoven with one another and their trust with one another was so deep, that engaging in a discussion about their experience as a group of designers was a natural progression from the individual interviews. I engaged them in a focus group discussion to do some final reflections and check for congruence of the analysis with their experience.

We sat in a small conference room around an oversized table, with the echoes of construction buzzing around us, and I spread the images of three tools before us. I asked them whether the metaphors resonated with their experience, and if so, which one resonated with them personally. Each coach had been the inspiration for a particular metaphor for me, and each of them recognized and resonated with what I had seen by gravitating to that particular metaphor. They even smiled when they saw them and I used their language to describe the function they served. It was like watching each one connect with an old friend. Figure 10 shows the images I placed on the table in front of the three coaches.

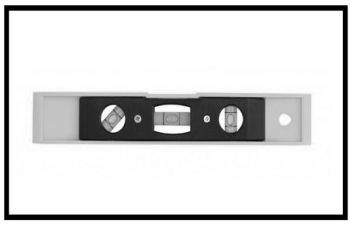
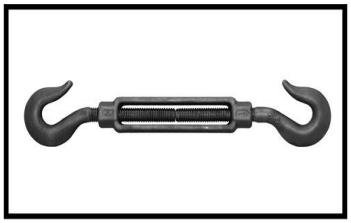
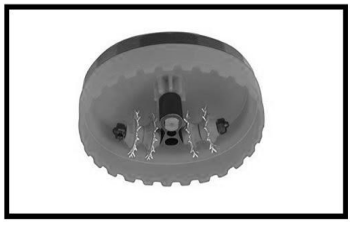
The Level	The Turnbuckle	The Scoring Tool
		

Figure 10. Tool metaphors to describe how to navigate cognitive dissonance.

This stage of the design process unearthed the prototype for what it is like to make space for autonomy in a blended learning environment. The metaphor of the level, the turnbuckle, and the scoring tool was born out of many conversations, observations, and interactions with Karen, Jackie, and Eleanor. The phenomenological journey that follows is the story of how this experience developed and presented as they designed for autonomy in this professional learning opportunity. These metaphors additionally provide insight into Research Question 2: When designing for autonomy, what beliefs and practices are strengthened, and which are let go?

The level. The *Oxford English Dictionary* defines a level as "an instrument which indicates a line parallel to the plane of the horizon, used in determining the position as to horizontality of a surface to which it is applied" ("Level," n.d.). The level is used to inform adjustments needed to achieve the desired result. In the context of designing blended learning, the level represents the experience of returning to stasis, identifying where you are and what you know to be familiar. It is the experience of reorientation after disorientation or cognitive dissonance, and a return to familiarity or structure. The designers had an intuitive sense about the brain science around individuals' perceptions of threat at any given time. Perry's (2017) research on brain science and how people respond to different levels of threat demonstrated the immense power of different areas of the brain on any given situation, particularly in learning: "How extensively stress systems are activated is related to how threatening the situation appears. It's important to understand that our default is set at suspicion, not acceptance" (Perry, 2017, p. 48). Karen drew on this brain science to make sense of the logic behind why she valued the process of leveling in the following quote:

> I think because the level takes me back to all of my previous work with coaching and going back to some of the brain research of when people have the ability to move forward with learning (and with coaching). Right? And when they're in their limbic system . . . And so this [level] is reading when people are in that limbic system and fully emotional, and then looking for ways to bring them back into a place where then you can look for that pivot point to move forward. I think that's why that resonates with me. (Karen, focus group, March 13, 2019)

The coaches knew that working with the same teacher-participants over the course of 2 years meant they could develop a trusting environment. This would allow them to help regulate through increasingly complex or provocative content over time.

During the opening circle for teacher-participants in MC4, Karen welcomed the participants and handed each a quote to read to the rest of the group. The full technology design team had previously scored the required submissions from MC3 at the end of the previous semester. Teachers submitted their own work to receive credit for the course, and, in turn, the technology design team had unique insight into their experience as learners. As part of that process, Karen, Jackie, and Eleanor collected the technology design team's roughly 40 quotes that would be read aloud during the opening face-to-face session for MC4.

The coaches reflected on what it was like to see the work of these teacher-participants. The quotes were both specific and general, but in being read aloud, they brought a collective impression and celebration into the space about the work and the growth of these individuals. Sample quotes sounded like these, both from evaluators and technology design coaches: "You leveraged learning style surveys to provide *every* student with a learning experience that meets their needs. Seeing your pre-K students working at such a high level of autonomy is truly inspirational!" and "I really enjoyed the opportunity to witness so many amazing journeys and experiences across classrooms throughout the district. It is so exciting to see students benefiting from such intentional and reflective instructional practices." The teachers reflected on the patterns and connections they heard. This collective reflection grounded the group in their journey thus far by bringing a new awareness of where they had been and where they were now

by offering a perspective outside themselves. This was a classic example of a carefully planned group "leveling" moment to provide structure, predictability of support systems, and patterns of celebration they could expect every time they met in person.

Karen was often the voice that connected the participants to a moment of self-reflection. She reminded them of where they had been and made sure they were anchored in a celebration before moving forward. It was not uncommon for Karen, Jackie, and Eleanor to assess when they might need to level the teacher-participants after a cognitively taxing activity, after engaging for a longer period of time with concepts, or to connect the participants to one another or to their own classroom realities:

> We plan these moments for the most part, but we are always looking for opportunities to check in. We are always reading the room. I usually know when [there is a need to employ the leveling tool] when the room is more robust than usual or more quiet; body language and expressions tell us a lot as we get to know the participants. (Karen, interview, March 13, 2019)

Karen connected her affinity with the level with how she internalized coaching. She spoke of the balance of power between coach and one who is coached, and her understanding that "it is only when you are level that you can consider anything new" (Karen, interview, March 13, 2019).

The level is arguably the most helpful tool to facilitate self-regulation in that it is remarkably sensitive to stimuli, just like humans are constantly assessing experience against their own schema. Imagine that the bubbles of air in the gauges built into a level represent external stimuli, internal stimuli, and collective consciousness. During the implementation of the professional learning experiences, the coaches were navigating

how information was perceived by the collective group as well as by each individual in the room or on the other side of the computer screen. Slight changes in body language to significant vocalization of discomfort were indicators of incongruence with new information or experiences. Though Karen was often tapped as the official "leveler," all three coaches attended to the needs of the group at the same time. It was Karen who stepped in at moments when logistics were front and center. For example, the requirements for the completion of the micro-credential included the completion of several different artifacts and reflection, all of which would be assessed according to a rubric. Upon first look at the requirements, the perception of overload was pervasive among the teacher-participants. Karen helped to set expectations with the group by preparing them for what was about to happen and chunking the information into digestible deliverables. Often, when the group had been challenged by an activity, it was Karen who would chime in, bringing awareness to the group about what was happening in the room and having them reflect on what was in their control and what they might want to think about next.

Eleanor recognized that as a group of designers, they were aware of which one of them best supported this leveling need:

> I tend to give, and Karen tends to take, the pieces that are kind of more leveling, literally logistical—but not logistical in a boring way! Logistical like they *really* need to understand these logistics so that they can move forward. (Eleanor, interview, March 13, 2019)

Leveling in this instance describes the process of demystifying information so it is more familiar, predictable, and within one's control.

In the work of developing participant autonomy, the coaches ultimately wanted the participants to have the wherewithal to level themselves, or assess their own levels of involvement, emotional experience, locus of causality, motivating force, regulatory guides, goal orientations, and needs in order to become more self-determined (Deci & Ryan, 2002). The technology design coaches were particularly excited when they saw this happen during one of their sessions in which the participants were engaged in an individual rotation model (Horn et al., 2015). This is the blended learning model in which teacher-participants progressed through tasks at their own pace, in possibly different sequences, and guided by their own playlist of relevant activities.

> At one point, a participant said, "I'm ADD, this [room configuration] is hard for me." We took his feedback to help him find a space where he could focus. Then he said, "So, I wonder, what does this mean for the kids in the classroom?" We were so happy he was advocating for himself. (Karen, field notes, September 14, 2018)

This participant recognized that he was in control of how he was experiencing this moment, and his experience was unique. He demonstrated the necessity of his own voice to alter his experience. Eleanor chimed in to add, "He didn't cut off his learning, but he was thinking about implications for students because he realized there is such power meeting in small groups. That was a huge breakthrough" (field notes, September 14, 2018). The participant's own struggle with an aspect of blended learning provided a window into his ability to find solutions in order to reap the benefits he also experienced. Did the modeling of continual self-assessment give him the tools necessary to navigate the tension he felt? It seemed so.

When the experience demanded an unplanned use of the leveling tool, those were the moments in which the coaches paid close attention during their debriefing sessions. Those moments often indicated a shift in the design for next time. For example, when facilitating blended learning where different people are at different stations or areas of the room engaged in different activities, there are potentially a wide variety of activities happening at once.

> What's interesting is that the group that didn't start with teacher-facilitated time that was kind of like, "I'm just here [in the learning lab, a space for self-driven exploration and individual work], do I have to talk to this person next to me?" We noticed some of those pieces, and by Day Three, we stated that "those of you in the learning lab, feel free"—because that's more individualized—"feel free to, like, pop in earbuds if you're a person who gets distracted. Feel free to turn away if you need to. Don't feel like you have to engage with one another until you feel like you need a thought partner." (Karen, interview, October 24, 2018)

Leveling showed up in the form of teacher-participant permission. Participants seemed to be trying to navigate the norms of the learning environment as constructed by the technology design coaches. However, the culture of this blended learning environment was intended to be co-constructed. Questions such as, "Can we move now?" or "Is it OK if I turn my chair this way?" indicated an initial discomfort with the idea that they were empowered to make those adjustments as needed. Karen described it as introducing them to a new "flow and culture of the room." The coaches did adjust the learning lab table configuration based on teacher-participants' previous experience, so that when they did not face one another directly, they understood more clearly that the

space was intended for individual work or self-reflection. This slight change signaled to the teacher-participants that the room was intended to promote freedom of movement. "It was like giving them permission to kind of go inward when they needed to" (Karen, interview, October 24, 2018). After asking for or experiencing permission once, those who struggled with this new learning format expressed a sense of relief in making their own decisions.

The turnbuckle. According to the *Oxford English Dictionary*, a turnbuckle is "a coupling with internal screw threads for connecting metal rods lengthwise or for regulating their length or tension" ("Turnbuckle," n.d.). In this context, the turnbuckle represents the experience of placing two concepts purposefully in tension with one another and the act of tightening or loosening the tension between them. The identification of two concepts in tension helped focus the participants on the forces at play in a specific instance. It made it easier to engage with one or two ideas without the complication of the myriad other issues that occur simultaneously in daily life.

> I got this really long letter from a student one year after teaching him for a full year of a course on politics. And he could not tell if I was a Democrat or a Republican. And that was like the highest compliment because I am obviously really far on one of those spectrums in my personal life. But I did a good enough job in class pushing the ideas together in a way that he couldn't tell my bias. And that was like . . . I hung that up because I realized that if I'm doing this, then I'm doing my job right. (Eleanor, focus group, March 13, 2019)

Eleanor often used storytelling and questioning to set the stage for a turnbuckle moment as reflected in my field notes:

> The participants were scattered around the room, some with Karen, some with Jackie, some with Eleanor, and some working independently. Eleanor was facilitating about eight teachers at two large round tables that had been pushed together. This station was a guided introduction to the differentiation domain of blended learning. The work at this station would influence how the teachers would design their own playlist, or schedule, that would guide their afternoon experience.
>
> After directing them to read over the text, Eleanor asked, "What patterns do you notice about these practices, and what seems the most challenging?" The intimate group seemed comfortable voicing their insights and their trepidation around some of the points in the document. One of the teacher-participants read, "Teacher uses data to inform instruction" from the document outlining practices to support blended and personalized learning (Highlander Institute, 2017). A lull fell over the group. Bodies shifted in chairs, and tension was clearly present.
>
> A reassuring smile spread across Eleanor's face. It was as if her gift for using the turnbuckle was activated in this moment. She named the offending word, *data*, and immediately launched into a quick story from her own experience. "Data. This is a word I didn't always like as an English teacher. I had to change my relationship with this word." (field notes, September 12, 2018)

Eleanor seemed to empathize with the feelings of those in her group in that moment by making her own journey transparent. She made herself vulnerable, but she did not back away from the tension that had been created. She seemed to feel that it was important to maintain the tension in this moment to help create a new context where "data" were

transformed from bureaucratic oversight to an essential tool for personalization and self-reflection. She apparently recognized that in a few minutes, the teachers were going to reconnect with some of their own feedback data they had received the previous year, and felt it was important to begin to break open any possible negative associations teachers had with this word first.

The power of the turnbuckle lies in the fact that when tension is present, there is purpose in staying with it for longer than perhaps one might instinctively do. There is a willingness to pause during moments of discomfort. In this moment, one either becomes comfortable and can then increase the level of cognitive dissonance, or becomes increasingly uncomfortable and must find a way to gently back out before dissociating completely: "Without the stress, the system wouldn't know there is something new to attend to. In other words, stress is not always bad" (Perry, 2017, p. 40).

At one moment during a face-to-face session, participants were learning about a long list of requirements for MC4, some of which were unfamiliar and described concepts for which they had no context yet. As a group, they reviewed the rubrics that would be used to score their work and they read about the artifacts they would need to produce by the end of the semester. In blended learning, it is important to make the learning goal clear and allow time for the development of a learning path as part of the learning process (Linton, 2018). In the whole-group reflection, the participants shared their anxiety about what they were being asked to do. Eleanor instantly recognized that the tension between the present state and the future expectation felt unbearable, and the sentiment seemed to be spreading. In order to "loosen" the tension, she connected the participants to where they had begun in MC1 and their unbelievable successes over the

past year and a half. Changes had not happened overnight. She guided them in a process to make the overwhelming picture smaller: "Let's identify that one, first step" (field notes, January 8, 2019). Again, through a carefully placed story and a resourceful question, she loosened the tension so they could move forward.

The turnbuckle showed up regularly in design meetings among Karen, Jackie, and Eleanor. They were constantly navigating the tension they wanted to introduce and at what intensity level. They designed for specific moments when they wanted concepts to collide and be "troubled" by participants (Lather, 2007). They wanted to engage participants' thinking around what is public versus what is private in a blended learning environment, or in professional learning generally. They grappled constantly with what would feel authentic to participants versus what would feel artificial. With almost every decision in the design process, they had to navigate what experiences should be structured versus which demanded flexibility and choice. The relationship among Karen, Jackie, and Eleanor as co-designers had created a close-knit, trusted, small design community. Their relationships with one another allowed them to twist the turnbuckle tightly in their own design. It seemed they had deep respect for one another, founded not in pleasantries or instant agreement, but in their ability to challenge one another, disagree, and sustain tension to move to the other side. They all recalled a difficult moment when stress was high and the timeline was pressing down upon them:

> When it is the three of us, it's a continuous talking-through of things, and also the willingness to just scrap old things and go in a new direction. Also thinking about what it is we're trying to do, but also the feeling that we're hoping the participants will get. So thinking about when we were planning MC3, and we were really

> struggling through how to structure their face-to-face time, we had three white boards [full of ideas]. We thought we had it, and then we just kept talking. I think one of the unique things about us is we are never really satisfied with how something is, so we don't just stop. We keep thinking about what's going to make it better until we get to that moment and we say, "Yes! This is it." So continuously talking through and willing us to not just stop the process right before we have that moment of breakthrough. (Eleanor, interview, October 25, 2018)

In his book, *The Boy Who Was Raised by a Dog*, psychiatrist Bruce Perry (2017) outlined several of his most intense childhood trauma cases, and while providing insights into the brain science behind individuals who are moving beyond horrific life experiences, he reminded us that, universally, we learn from productive tension: "If moderate, predictable and patterned, it is stress that makes a system stronger and more functionally capable" (Perry, 2017, p. 41). Both intensity of experience and the regularity or pattern of that experience have an effect. The turnbuckle is designed to flex and respond to individual levels of stress tolerance.

The scoring tool. A scoring tool is used primarily to make the removal of wallpaper easier. When scraped against a wall, the tool scores the paper, or tears and lifts tiny pieces of it away from the wall. These small tears provide openings for water or another adhesive remover to penetrate and loosen the layers of wallpaper so they can be removed to reveal what is beneath. According to the *Oxford English Dictionary*, to score means to "remove by cutting" ("Score," n.d.).

> This is my philosophy degree . . . I think that I am very comfortable with poking holes through my own ideas to see what's there. And even if I ended up believing in the same thing I believed at the beginning, I know better now why. I've explored it more deeply. (Jackie, focus group, March 13, 2019)

In the context of designing and facilitating blended learning, the scoring tool represents the experience of intentionally creating moments of cognitive dissonance or moments of challenge that can vary in intensity depending on the pressure applied. Every once in a while, there was a moment when Jackie, Karen, or Eleanor planned to purposely apply some element of shock around an idea that had become normalized. This "scoring" move was used less frequently than the others (i.e., leveling and turnbuckle), and it was often purposely sandwiched between two leveling activities. In the moments when the coaches knew that old practices or limiting beliefs would be in direct conflict with moving forward, the scoring tool offered what felt like the only path forward. Generally, the scoring tool represents the most dysregulating move of all three of the tools, and also one that created mental or emotional space that did not exist prior.

Each of the three coaches referenced a design choice they had made for MC4 as a classic example of a scoring move. After several "leveling" experiences by way of self-reflection, the coaches planned for a real moment of significant cognitive dissonance. In order to engage the teacher-participants in self-examination of their own expectations for rigor and mastery, Jackie introduced some research ideas that she knew would cause some discomfort. A study done by TNTP called "The Opportunity Myth" (TNTP, 2018) provided the platform for the conversation. In essence, inequity is often maintained by inconsistent access to high-quality materials and fueled by teachers' choices of what

instructional materials to use. Teachers' expectations and biases around student performance are revealed in the materials they choose to use.

Jackie condensed the research into a few of the findings from the study that are difficult to hear if you are a teacher. She read statements such as the following:

> In the nearly 1,000 lessons we observed, students were working on activities related to class 88 percent of the time. They met the demands of their assignments 71 percent of the time, and more than half brought home As and Bs. Yet students only demonstrated mastery of grade-level standards on their assignments—a benchmark for being on track for the lives most of them want as adults—17 percent of the time. That gap exists because so few assignments actually gave students a chance to demonstrate grade-level mastery. (TNTP, 2018, p. 4)

After she read this quote, the room was deafeningly quiet and still. Everyone's eyes were on either the presentation screen or Jackie. Though this moment lasted only about 15 seconds, there was a palpable need to allow participants to both breathe and self-reflect (field notes, January 23, 2019).

In addition to planned moments, the scoring tool appeared spontaneously at times. During a required station for MC1, Jackie led a seminar in which all participants planned to attend by signing up for a time during the afternoon. At this station, Jackie welcomed them to the table and oriented them that they would be deepening their understanding of blended learning. They would leave with the ability to articulate their personal problem of practice. One of the documents they examined together was the Highlander Institute's Personalized Learning Progression as outlined in Figure 11 (Rubin & Sanford, 2018).

This was a way to provide language for teacher-participants to articulate what they wanted to work on shifting in their practice.

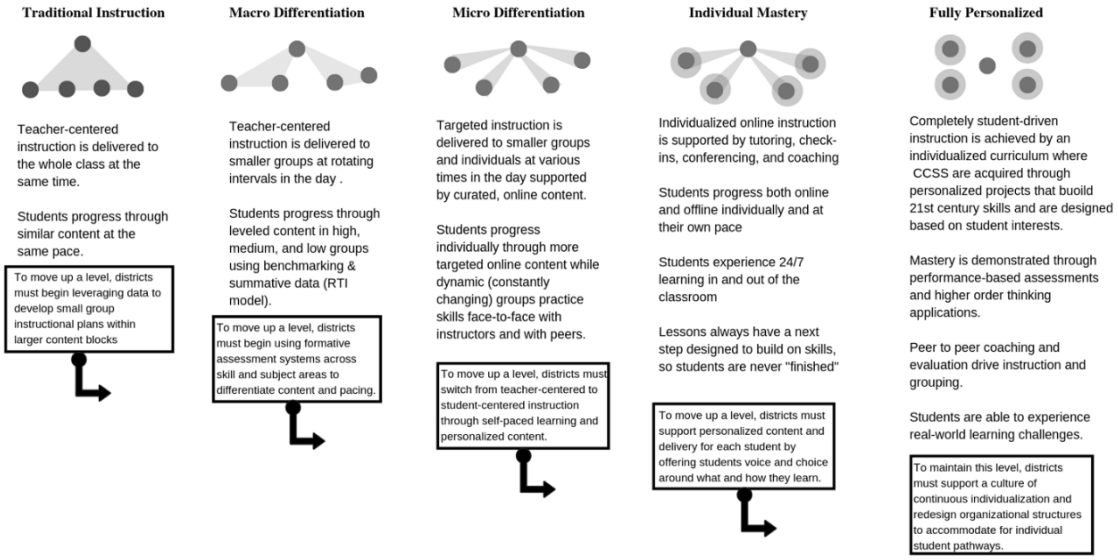


Figure 11. Highlander Institute's Personalized Learning Progression (Rubin & Sanford, 2018).

Upon being asked for initial responses to this document, the first person from the group to comment expressed frustration that a fully personalized environment would cause backlash from campus principals. Everyone looked to Jackie for a reaction. Without missing a beat, she first volleyed the question back to the group: "Anyone else experience backlash or pushback from administration around these ideas?" She activated the collective voice of the group to help answer the question. This move allowed others to grapple with this idea and provide solutions before Jackie leaned in to challenge them further. It was clear that teacher choice and autonomy were in tension with standardization, and now, teacher efficacy and administrative power were also in the throes of the turnbuckle.

> I would be more than happy to come to your campus and do a crosswalk with that principal personally. Blended and personalized learning gives insight into where the students are when they come in. I assess them where they are and know what they need to get to where they are going. (Jackie, field notes, September 13, 2019)

This offer of partnering with the teacher to engage in a conversation with the building leader briefly shocked and then silenced the group. Jackie's tone of indignation was something the group had not expected. She was suggesting that the teachers had given their own professional judgement away. Her body language demonstrated confidence as she locked eyes with everyone around the table. In effect, the teacher-participants were being asked to imagine themselves standing up for ideas they believed in, particularly to their principals. Would they do it? Could they do it? And if they could not, would they call for backup? That was the offer on the table (field notes, September 13, 2018).

Jackie tended to be the most comfortable activating the scoring tool, and I could not help but wonder if my positionality as her supervisor, and former colleague when we worked on the same team years prior, cleared the window to my ability to recognize it. Jackie and I spent countless hours working to craft a vision and plan for the use of technology in the district before our current team had formed. We facilitated many meetings where we purposefully pushed the limits of our audience to try to break through old paradigms associated with digital technology use. We developed a working relationship where we encouraged and supported one another to create and stay in moments of discomfort longer than what felt typical in other professional learning spaces.

Our current power dynamics may contribute to the exploration of this particular strategy. We learn early as educators that a controlled, compliant, and happy classroom is desirable through walk-throughs from our supervisor. If your supervisor is looking for something else, such as productive struggle, it changes how you perceive your role. This level of safety is built over time. It also means it will show up in informal interactions during planning. Jackie uses the scoring strategy in day-to-day interactions as well and recognizes when it is effective and when it is not. Her banter with me has at times made others and myself uncomfortable, I believe, because of power dynamics and traditional expectations around respect. I take notice when this comes up for me to look at the underlying idea, and as much as I can move out of a personal response. History with Jackie allows that process for me that I recognize might not be there for others.

During the focus group, the discussion around the scoring tool provided moments of discomfort. Karen shared that it was the tool that resonated the least for her. The move of scoring seemed intense and not something a coach would do, based on her experience. Jackie engaged around this idea to clarify, "I don't see this as a ribbing or, you know, a destructive tool—this is about uncovering, right? Cause it's like, 'Y'all need to get rid of some things to get to the next layer'" (Jackie, focus group, March 13, 2019). Upon additional reflection, Jackie stated the scoring tool would never be one she would use in a coaching cycle with a teacher—that, if anything, the turnbuckle represented the more gentle and appropriate way to engage. The scoring tool should be used sparingly, and always with the other two tools activated as support.

I wondered if the tools were on a spectrum of intensity and asked the group if that resonated. "I think I almost see it more like a cycle, but not in an order. I mean, you can

change the order. Right? But, like, you're going to need to do some of that [leveling] after *either of these* [turnbuckle and scoring tool]" (Jackie, focus group, March 13, 2019). This moment had Karen reflecting on a more administrative meeting she had attended in part to represent teacher-participant voices from the Transformative Technology pathway. She realized that the scoring tool was the only tool that was going to work in this moment when she needed to communicate an idea counter to what was being shared:

> And the only way that I was going to break through was by being really explicit with it, in a couple different ways. And in my mind, I was like, "now, I *have* to go here." Even though this makes me super uncomfortable. (Karen, focus group, March 13, 2019)

Jackie chimed in to clarify her position with the scoring tool:

> I don't see value in this tool [scoring tool] without the other tools, right? So even if I'm actually, literally taking down wallpaper, this [scoring tool] by itself is not effective. You need other things to finish that work. But I also definitely see the value of cognitive dissonance, which I think this creates as well. And that's what you just described, Karen, which is, we need to break something small, right? Because these are tiny holes that this creates, right? It's going to sink in way faster with some people and way slower with other people. (Jackie, focus group, March 13, 2019)

Summary

In continued reflection about how the tools showed up in design, Jackie recalled how leveling was a process the coaches embraced as a team. They were continually reviewing feedback and iterating on their design. She said:

> I do think that there's a little bit of it being the three of us as people. It is that collaboration that we've built and the trust we have in each other. Like, there's no ego here, and we celebrate and honor and challenge and score each other all the time. (Jackie, focus group, March 13, 2019)

The relationships they developed with one another contributed to the effectiveness of the tools. The tools themselves did not create the climate, but once the climate was established, the tools were incredibly powerful processes to inspire interactions between the teacher-participants and the coaches. The community the coaches built with one another was highly regulated. The fact that they could level with one another so easily allowed them to engage in increasingly tension-generating conversations.

Autonomy had guided the conversations, but it was never fully separated from the concepts of relatedness and competence, the other two elements necessary for psychological well-being (Ryan & Deci, 2017). Eleanor gave a piece of advice for anyone looking to design for autonomy:

> How are you going to build relationships with the people you're working on for sustained work? You can't push teachers forward in their practice in a meaningful way without attending to the relationship piece of it. Just like you can't do that with students. (Eleanor, focus group, March 13, 2019)

This final reflection brings the wider perspective of SDT back into focus. It is a reminder that digital technology use needs to be situated as a means to facilitate blended learning with personalized learning as the end.

Equity pause #8. In the final focus group, I shared with Karen, Jackie, and Eleanor how I had learned from watching and talking to them. In the process of writing these findings, I had grappled with the tension that had been created for me around exploring this phenomenon through an entirely White, female perspective. Though on one hand I wished that we represented additional perspectives in that we could not speak to how this experience was felt through the context of a woman of color or a man for example, I recognized that this experience allowed me to examine fully what our unique intentional interactions might hold. I was grateful that this opportunity allowed me to understand more deeply the experience of this design while simultaneously forcing me to recognize and highlight where the missing voices were, both in the research design and in the experience of designing for autonomy. I sensed, through my own storytelling, that I had created some tension around the topic. I knew that attending to issues of equity was of utmost importance to all three of the coaches. I asked them whether they had considered that, too—if they had thought about how their own Whiteness might be reflected in the design. After a moment of silence and several statements about wanting to make some changes, Jackie said:

> But I think you've just demonstrated for me the power of the scoring tool, right? You, you, just poked some holes in our wallpaper, and we're going to have to let that seep in a little bit, right? I mean, I don't think we can rip it off right away, but we're like, "oh, we've had this conversation about Leadership Pathways in

> general," right? And looking at who was at the table. I mean, I think we actively work to make the program as equitable as possible, to think about where these teachers are and where these teachers are not, you know, who's in their classrooms, who's not in their classrooms—but to think about it as the three of us as White women and our participants as the range of diversity in this district. I don't know that we've really gotten there. (Jackie, focus group, March 13, 2019)

It is through this equity pause that I recognize that the prototype of the three metaphors in action has a bounded context. We have a collective sense of the experience of designing and navigating autonomy in a professional learning context for a small sample of White women. How would that experience be different for men? How would it be different for Black or Latinx professional learning providers? How might the metaphorical toolbox expand by examining the experiences of others with similar goals?

Additionally, the experience has not been correlated to how the teacher-participants were actually adopting new beliefs and practices in their classrooms. Anecdotally, the changes were significant. As Karen, Eleanor, and Jackie reflected on the classrooms in which they observed the most rapid and significant change, they realized these were at campuses with higher populations of Black and Latinx students. Teacher-participants at higher-needs campuses were more willing to challenge their beliefs and make changes to their practice. Eleanor added specifically:

> Karen and I went to a session at SouthBy [SXSWedu 2019], a short 20-minute session, and they started off by saying, like, blended and personalized learning is a very White, affluent space. And it made me think, "yes, from *our* perspective," right? But then, the teachers who are doing more work and having more success

> with it in their classrooms? That's *not* what I'm seeing is true. So it was an interesting thing to think about. Like, "yes, I think the—the space, the people who are bringing the work forward are White, yeah, which is a dangerous space to be in." (Eleanor, focus group, March 13, 2019)

As a researcher, I acknowledge that I, too, demonstrate the act of amplifying the research space around blended learning through a White lens, and I therefore contribute to that narrative. However, I believe the kind of self-reflection and construction of knowledge that is foundational to a blended approach moves us collectively toward a more culturally responsive approach to teaching. Blended and personalized learning pedagogy attends explicitly to identity, interest, and agency (Highlander Institute, 2017), and those concepts are supported by a human-centered foundation represented in SDT, notably that of autonomy.

VII. PHASE VI: TEST

The test phase of the design thinking process is grounded in reflection. The results of the study reveal insights into other phases of the process that may need further definition, and which possible solutions or ways of examining the issue at hand were useful and which were not. User feedback is foundational to considering all elements of the process. Far from the end of a linear process, the test phase marks an essential checkpoint in the process of iteration. It is not an end, but a beginning (Dam & Siang, 2019).

In this chapter, I use the test phase of the equity-centered design process as a guide. The test phase, in concert with reflection, serves as a conclusion here but is actually a moment in the middle of a bigger design process, one of the most pivotal in synthesizing new information and returning to clarify and move through the process again (Clifford, 2017). The equity-centered design process served as a fluid and dynamic road map to guide a discussion meant to break open, explore from new angles, and celebrate the unexpected perceptions of professional learning providers of designing for autonomy in a blended learning environment.

I first revisit the questions that framed the study and describe how the SDT framework guided the focusing of the data gathered through the context of blended learning. Then, I discuss recommendations for future research as a result of this study. This includes recommendations for professional learning providers as they navigate leading teacher pedagogical shifts in blended learning environments.

Summary of the Study

Three technology design coaches participated in this study as they designed and implemented a 2-year professional learning experience for over 100 teachers. The three coaches were selected based on their uniquely situated experience working collaboratively to design professional learning in one urban Texas school district. They modeled the pedagogical shifts espoused in the blended learning research intended to increase autonomy as they taught others how to make those shifts applicable to classroom practice. The questions that guided the study were:

1. What does it mean to make space for autonomy in a blended learning environment?
2. When designing for autonomy, what beliefs and practices are strengthened, and which are let go?

The tenets of post-intentional phenomenology helped me in examining dialogue from multiple interviews, my post-reflexive journal, and observations of practice as a means to inform a new narrative. The open-ended nature of the questions was intended to ground the study in such a way as to allow for authentic, emergent themes to arise.

Research Questions Revisited

Research Question 1. What does it mean to make space for autonomy in a blended learning environment?

I entered this study after a mental clearing, or bridling, of my own presuppositions about making space for autonomy in any learning environment. The study provided an environment in which to explore the experience of facilitators with the design and implementation and the content of blended learning was a lens for my personal curiosity

to flourish. Three core experiences emerged from this study that provided the basis for numerous readings and rereadings of the interview and observation data. The experience of designing and the process of implementing the design for autonomy in a blended learning environment are inextricably tied together through the act of noticing and reflecting. During those moments, assessments of participants' levels of regulation informed the next step for the designers to move participants toward a greater sense of autonomy and integration. A new conceptual framework emerged that outlined the connectedness and interactions that appeared among the equity-centered design process, the implementation of the design, and the perceptions and judgements necessary to increase participant autonomy.

The level tool represents the designers' most regulating tool used to inspire participant calibration, self-reflection, and mindfulness. The turnbuckle represents the designers' activation of purposeful productive stress or tension. It is a facilitative tool used to purposefully challenge assumptions by putting two ideas in tension through activities such as structured debates, exploring dichotomies, and providing choices. The scoring tool represents another facilitative tool used pointedly and purposefully to disorient by interrupting automatic thinking. Actions such as provocative storytelling, presenting intentionally shocking data, or facing uncomfortable assertions might be represented by the scoring tool. Designing for autonomy in a blended learning environment means committing to noticing and reflecting on the learners and their sense of regulation, understanding the use of responsive facilitative tools, and adapting what is learned in the moment to future design and planning. For example, designers anticipate moments in which participants may not feel fully regulated and plan for "leveling"

moments to support them more fully. When unexpected moments arise, it means taking note to proactively address them in the next iteration of the learning design.

Research Question 2. When designing for autonomy, what beliefs and practices are strengthened, and which are let go?

The three participants in this study expressed congruence and interest in the uncovering of a new intentional layer in their design process, specifically the naming of three tools to guide learner regulation. Through the data gathering and analysis process, the technology design coaches both described and demonstrated the specific responses they had during moments that surprised them the most. I characterized these experiences using the metaphor of three tools, and used member checking to ensure they accurately described the coaches' experience. The implications for future designs are still emerging. The strong commitment to modeling a blended way of teaching uncovered the choices around which tool to use and when. In this case, the content learning goals were predictable structures, flexibility in response to real-time feedback, the development of an autonomy-supportive classroom culture, and the alignment of goals and processes. The content was both co-constructed and delivered through face-to-face and online interactions.

Several moments of clarity emerged around the technology design coaches' collective agreement that designing for autonomy in this specific case could not have been done in isolation. Their collaborative efforts were not just welcomed, but necessary. A deep belief in the power of human connection emerged with renewed conviction that the face-to-face component of blended learning is foundational in supporting autonomy through the development of meaningful, trusting relationships. It was this commitment to

the importance of creating relationships that allowed all three of the tools in the framework to emerge. Through the course of this study, the designers learned to question their own assumptions associated with the status quo; trust their intuition, thus reducing the need to ask permission to try something new; and let go of the idea that any one person can design an optimal blended professional learning experience on his or her own.

A New Conceptual Framework

This newly conceptualized framework demonstrates the intentional processes needed to enhance autonomy. Facilitators of learning can choose to notice or ignore feedback from participants about their level of motivation or regulation. However, those who make conscious decisions to support intrinsic motivation create more opportunities for authentic integration, or the endorsement of new ideas and behaviors. SDT (Ryan & Deci, 2017) research emphasizes that:

> Factors that contribute to perceptions of being externally regulated and/or incompetent undermine intrinsic motivation, whereas those—such as opportunities for choice, positive feedback, and acknowledgement of people's internal frame of reference—that support perceptions of autonomy and feelings of competence maintain or enhance intrinsic motivation. (p. 17)

This framework, outlined in Figure 12, places the design process and the implementation or execution of the design into two distinct and parallel processes that are connected to one another in order to provide a context for the intentional relations that appear when trying to increase autonomy. The design process is in many ways a non-linear process, but one that has components that serve as guideposts or checkpoints to orient the designer along the way. The non-linearity is thus represented in the design process. After each

component, there is a return to the practice of noticing and reflecting, and potentially circling back to any other component in the process. These critical moments in the design and the execution of the design can be characterized by a central theme in SDT: "The concept of *awareness* [emphasis in original] is seen within SDT as a foundational element for proactively engaging one's inner and outer worlds, and meeting demands and challenges" (Ryan & Deci, 2017, p. 267).

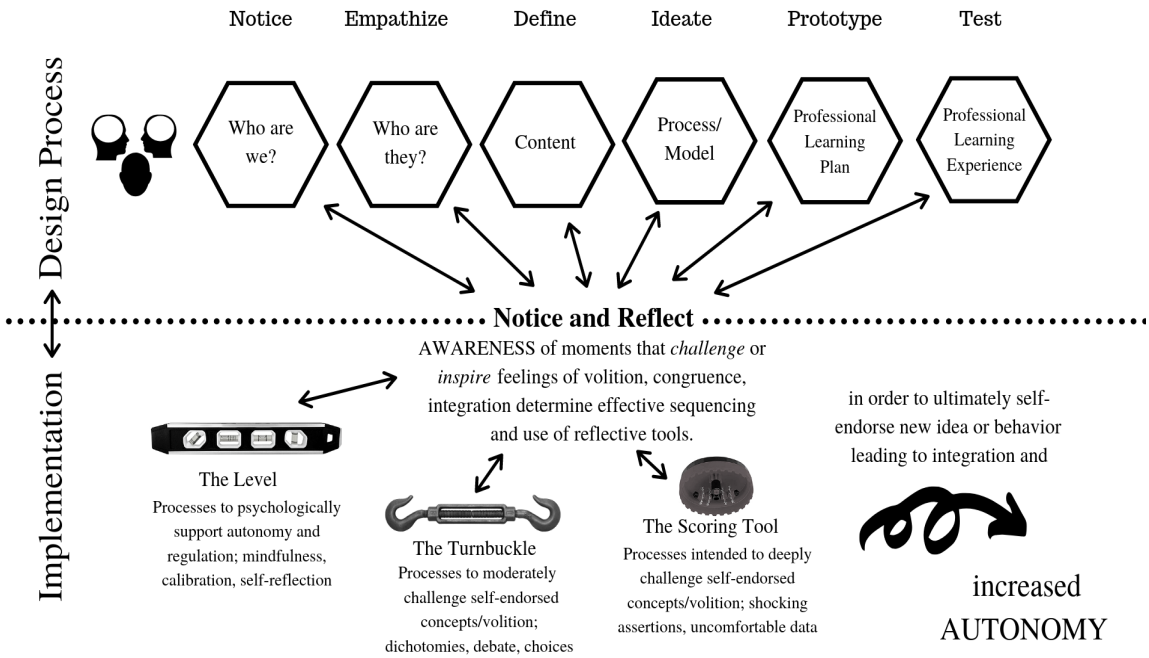


Figure 12. Researcher's redesigned conceptual framework—designers' experience making space for autonomy in a blended learning environment.

In the implementation process, the three regulatory tools of the level, the turnbuckle, and the scoring tool are used consistently during the execution of the design. Through the central commitment to the practice of the notice and reflect component, those experiences generate feedback for future designs. The framework can be read top to bottom, left to right, which tells a story that is familiar. Professional learning designers begin with the design and then move into implementing that design. The framework can

also generate insightful questions read in other configurations. For example, when designing for moments intended to exemplify the purpose of the turnbuckle, designers may need to assess the current beliefs held by participants who are attending a professional learning. This understanding of participants and who they are can reveal concepts in the content that could provide moments of purposeful tension. When discomfort arises suddenly in the learning, this can be an indicator that it was an unplanned scoring tool moment that requires a shift to regulate, and a level moment that was also unplanned. These surprising moments are essential to unpack, notice, and reflect upon. For example, designers may have incorrectly assumed that going over logistics, such as a timeline for completion, would be a boring and necessary step. However, during implementation, they realize that the timeline was going to trigger participants' sense of being professionals with additional constraints on their time. The designers' own sense of disorientation is just as important to notice and reflect upon as that of the learners. All of these data inform the next iteration of the design.

Autonomy as a Function of Integration

Ryan and Deci (2017), in their exploration of basic psychological needs theory (BPNT), one of the sub theories within SDT, asserted that:

> Autonomy is a function of integration, and for integration to occur, people need to freely process and find the grounds for the endorsement of particular actions. Because mindfulness relates to people's capacity to openly attend to current internal and external experiences, it allows people greater insight and the self-reflection necessary to ensure that their perceptions and values are congruent with their behavior. (p. 167)

This new conceptual framework demonstrates the complexity of navigating a professional learning experience that is intended to provide a pathway for participants to internalize and integrate new learning in a way that is authentic and aligned with new beliefs. This study brings awareness to designing for and executing moments that regulate, challenge, and even safely disorient learners through the interruption of automatic thinking and behaviors. Regulating moments (i.e., those necessitating the use of the leveling tool) include a reorientation to the familiar patterns of predictability and a regulating experience. Challenging moments (i.e., those that benefit from the use of the turnbuckle tool) involve purposefully exploring ideas that are different from and challenging of current beliefs. Disorienting moments (i.e., those instigated by the use of the scoring tool) are strategically intended to provide an element of shock to generate exploration of a deeply-held belief.

Design to regulate. Ryan and Deci (2017) described the understanding of the self through SDT, which was also used in this study. They stated that:

> SDT defines the self, first and foremost, phenomenologically. SDT is thus focused on the experiences underlying autonomous actions, those involving a sense of volition and self-endorsement, rather than on people's self-concept, identities, or self-evaluations and appraisals. In turn, acting with a sense of autonomy requires integration, as experiences of full volition are characterized by lack of inner conflict and willing engagement. (p. 8)

In order to integrate new experiences autonomously, this study revealed that regulation is a critical component of the process. Designing for moments or even dedicated chunks of time to allow learners to reconnect to a sense of deep awareness

provides the opportunity for learners to feel a sense of congruence and regulate themselves more effectively. When people are more regulated, they are open to experiencing more choice, vitality, and volition. In this state, learners are more in touch with their own needs, feelings, interests, and values. It is in this circumstance that they can effectively identify their own goals and subsequent behaviors (Ryan & Deci, 2017).

This act of re-centering, or using the leveling tool, is perhaps the most foundational of the three tools, as it is used to support the effects of the turnbuckle's tension and the scoring tool's disorientation, which are rarely, if ever, used alone. A designer's use of the level to regulate reflects a commitment to constant awareness of individuals' as well as the group's internal frame of reference. Designing with this tool reflects a commitment to pausing when necessary to create a space of awareness and reflection so learners can metacognitively reflect on and articulate where they are in their thinking at any given moment. Acknowledging moments of dysregulation and reconnecting with familiar patterns or structures allows learners to adjust and regulate, which increases the possibility that they will integrate a new experience. Ultimately, learning something new is a process of integrating a new idea or belief into current constructs. A commitment to autonomy-supportive practices requires that one notice and support the self-regulation of others (Ryan & Deci, 2017).

Design to challenge assumptions. A constructivist lens for learning, in which learning something new is an active process of assimilating new ideas into prior knowledge or understanding, is a foundational frame for exploring the use of the turnbuckle to challenge assumptions. When designers identify moments when they believe they will be introducing a concept that will feel new to the learners, they can be

thoughtful about how they want to juxtapose the new idea against a popularly-held belief, or a belief that has been expressed by learners. In the study, the use of data was such an example. Teacher-learners expressed a disdain for the punishing or shaming effect of traditional grading and reporting practices on individual students (field notes, September 23, 2019). The designers wanted to introduce a new paradigm that would open the possibility that data could actually be liberating and useful for students. Designers can choose to present the space between two ideas as closely related or in complete tension with one another. The initial presentation of a challenging idea and subsequent opportunities for learners to draw their own conclusions allows them the time and freedom necessary to integrate a new idea.

One tenet within SDT is that "all individuals have natural, innate, and constructive tendencies to develop an ever more elaborated and unified sense of self" (Deci & Ryan, 2002, p. 5). Providing intentional moments when learners have the opportunity to grapple with and be curious about new concepts allows space for learners to develop and elaborate on their prior understandings. Experiences such as structured debates, facilitator storytelling, facilitated small-group seminars, and some online discussions provide opportunities for the exploration of ideas. A blended learning environment is a social environment that exists both face-to-face and in a virtual space; therefore, the online course development component of this professional learning experience was also a space where teacher autonomy could be enhanced or diminished. Virtual components included participant choice in what and how to learn content, closely facilitated online discussions, and a direct connection in the course to face-to-face experiences.

Blended learning environments are unique learning environments that include an intentional social component. Ryan and Deci (2017) stated, "SDT research documents that in social contexts in which there is psychological support for these satisfactions [autonomy, competence, and relatedness], people's curiosity, creativity, productivity, and compassion are most robustly expressed" (p. 5). If the desired outcome for participants includes creating spaces where individuals feel that they can express curiosity, creativity, productivity, and compassion, then supporting autonomy is an element to consider. In the technology design coaches' blended learning environment, this desire was evident and necessary autonomy-support showed up in face-to-face moments in small-group seminars and in reflective online discussions or reflections of certain reading passages. Designers' awareness of participant discomfort or dysregulation and ability to level, or regulate, when necessary requires keen observation and a willingness to shift the conversation to allow for more time to integrate the new experience. When used successfully, the turnbuckle facilitates creative adjustment, "An ability to be open, welcoming novelty, and reflective—able to integrate inner and outer inputs into coherent actions" (Ryan & Deci, 2017, p. 24).

Design to interrupt automatic behaviors and thinking. Ryan and Deci (2017) defined *automatized behaviors* as "volitional behaviors that have become so well integrated that they could be done without consciousness" (p. 268), and *automatic behaviors* as "those that are controlled by forces that lie outside awareness" (p. 268). The scoring tool represents an action, experience, or idea that creates a disorienting experience that challenges or interrupts automatic behaviors. Automatic behaviors develop in response to speed and cognitive demands, but they are not always autonomous

in nature. For example, a teacher may have developed automatic practices around grading student work that may not be in congruence with what he or she believes regarding providing students with authentic feedback. The use of the scoring tool intentionally creates disorienting or incongruent moments in which learners are presented with purposeful space to take stock of and question their conditioned or automatic behaviors. This enables individuals to decide on new actions with more conscious choice and autonomy.

One of the most surprising moments for the designers during the implementation of the professional learning in this study was the effect that the initially most disorienting or disruptive ideas, concepts, and experiences had on both participants and themselves. There were moments of heightened tension or discomfort because the time was structured intentionally to slow down and open up possible implicit biases or unexamined aspects of personal belief systems (Vagle, 2014). These moments were carefully planned and required what felt like risk-taking at a specific moment in the experience.

Sometimes, the moments arose in the implementation spontaneously, such as in a small seminar group when Jackie interrupted a teacher's thinking by suggesting that she had given away her own power and professional judgement. Silence permeated the conversation, and time stood still for the teacher, for Jackie, and for the others listening to the conversation. Instead of quickly moving on to another topic, they sat with the idea together. Silence was often a key indicator of incongruence, and the process of returning to conversation revealed the likelihood of how the new information might be integrated into new thinking. These infrequent but powerful moments appeared nestled between activities to promote regulation (i.e., leveling activities) and were modeled in a safe,

supportive environment. The facilitator's estimation of the teachers' readiness for these moments determined the optimal time to employ this action, how much regulation would be needed, and how that might be facilitated differently the next time.

The use of the scoring tool and of the turnbuckle are similar in their intent to create space between current thinking and new thinking. The differences between the experiences of these moments is in timing and locus of control. The turnbuckle experience is intended to generate gradual internal tension between ideas so a new choice can be integrated. The scoring tool applies an exacting external pressure in a clearly defined moment that is instantly noticeable, and then requires an additional leveling process to integrate the new idea.

Implications for Professional Learning Leaders (Practitioners)

The content of blended learning provides a context in which the paradigms of traditional forms of teaching and learning are challenged. Professional learning leaders in this space must be willing to demonstrate and model those changes often to an audience that has not experienced learning in this way. By holding the belief that blended learning is intended to provide opportunities to develop autonomy, professional learning leaders need to feel a sense of autonomy themselves. Ideally, individuals who have their own sense of well-being will be able to ground both their design and its implementation in a state of full awareness. They might be what Ryan and Deci (2017) would describe as representing "a fullness and vitality of organismic functioning in which people are aware, psychologically flexible, and integrated, rather than depleted, defensive, rigid, or compartmentalized" (p. 243).

This study reinforces the integral nature of the interactions among the content, the professional learning facilitators, and the learners themselves. Professional learning design can more effectively support the integration of new learning by intentionally connecting learners' sense of autonomy by designing for and anticipating the critical moments for regulation, challenging assumptions, and interrupting thinking.

Implications for Researchers

Research dedicated to exploring and uncovering the benefits and challenges of blended learning falls into several broad categories, such as the implementation of blended learning, the impact of blended learning (particularly in the university setting) on students, and components necessary for successful design. In this study I intentionally brought together and investigated the space between design and implementation to capture what emerged as insights into experience of leading professional learning of any pedagogical change. The insights revealed in this study about the impact of regulatory tools and moves on both the design and implementation of professional learning have the potential for application beyond the content of blended learning. Future researchers interested in exploring the change process may find value in exploring how these designer and facilitator tools might be used in a different context or by individuals of different backgrounds and races.

Implications for Policymakers

As digital technology is becoming more and more available to schools, its use will continue to be part of the conversation. Blended learning is referenced explicitly in the recently adopted Texas Education Code House Bill 3, in amended section 29.924. This bill provides a state-supported grant program for schools to implement a blended learning

model with dedicated professional learning for teachers. Some pedagogical shifts are directly mentioned, such as allowing students to progress at their own pace based on proficiency; giving students control over time, pace, path, and place of learning; and dedicating instructional time to collaborating with students about individual learning needs. Though professional learning is mentioned in the context of providing training, there is no mention of the importance of professional learning design that supports the necessary teacher autonomy to make the shifts required to implement a blended learning model. Policymakers may want to include language that indicates understanding of the time and attention needed to supporting those leading professional learning or change. This will demonstrate an understanding of how the design and facilitation of quality professional learning matters in supporting teachers' change in practice. Skilled and responsive professional learning designers support processes to integrate new practices in a way that is in congruence with new beliefs.

Final equity pause. I continue to return to the assertion posited within SDT that the three nutriments of psychological well-being of autonomy, competence, and relatedness are universal and are expected to be present in all cultures and at different developmental points in time (Deci & Ryan, 2002). The outcome of this study demonstrates that by consciously and purposefully seeking to enhance the sense of even only one of the three components—autonomy—we can become more responsive to the needs of all learners. The equity-centered design thinking process provides for this essential moment of reflection in which I once again return to who I am as a researcher and how this study might have excluded important voices and experiences, particularly those of people of color.

The participants in this study—all White, female designers—have illuminated a conceptual framework that begs to be used with designers of different cultural backgrounds. How do professional learning designers with a more diverse background of any kind navigate key moments of regulation, assumption challenge, and interruption of automatic behaviors and thinking? What other moments might arise? Additionally, how do designers from different backgrounds react differently in these moments?

I continue to be driven by the notion that my commitment to developing my own sense of awareness is foundational to being an equity-centered leader committed to supporting autonomy for learners in whatever form that may take. Ryan and Deci (2017) reminded me that my own self-regulation as a leader is not only a worthy goal, but a human one when they noted that:

> SDT recognizes and researches the role of an inherent human capacity for developing awareness and self-reflection, including being aware of one's needs, values, and goals, and experiencing the difference between autonomous and being controlled. This capacity for awareness plays a direct role in healthy self-regulation. (p. 8)

I am now more attuned to the moments in both my professional life and my personal life that mimic the moments we design for in professional learning. I notice the moments in which I feel tension and try to stay in that discomfort long enough to make informed choices. I pause and notice what is going on when my automatic thinking or approach is interrupted and reflect on what is happening around me. I seek out individuals to engage in conversation about these moments in order to regulate and

make sense of new information, allowing for the possibility that my own thinking may change.

Ultimately, I reflect on those moments in my Montessori classroom as a child. I marvel at how the teachers developed a culture that fostered my autonomy, competence, and relatedness. Current access to digital technology has changed the means by which we can get things done and has added new dimensions to teaching and learning through blended learning. The ability to now connect with one another in ways that were once impossible, to access information once limited, and to create and produce with new media is commonplace. By designing blended learning in the context of autonomy, competence, and relatedness, I believe we have the opportunity to notice and reflect upon our practice and its effect on both children and adults. I have come to understand that school improvement efforts hinge upon the carefully planned and magically unplanned moments of interaction among teachers, students, and content, and on our subsequent ability to notice what will move us toward meaningful and personal new thinking and new beliefs.

APPENDIX SECTION

APPENDIX A

Participant Informed Consent

INFORMED CONSENT: Technology Design Coach

Study Title: MAKING SPACES FOR THE DEVELOPMENT OF AUTONOMY IN A BLENDED LEARNING ENVIRONMENT

Principal Investigator: Erin Bown-Anderson

Co-Investigator/Faculty Advisor: Dr. Duncan Waite

This consent form will provide the information you will need to understand why this research study is being done and why you are being invited to participate. It will also describe what you will need to do to participate as well as any known risks, inconveniences, or discomforts that you may experience while participating. We encourage you to ask questions at any time. If you decide to participate, you will be asked to sign this form and it will be a record of your agreement to participate. You will be given a copy of this form.

- **PURPOSE AND BACKGROUND**

  You are invited to participate in a research study intended to explore the experience of designing for autonomy in a blended learning environment.

- **PROCEDURES**

  If you agree to be in this study, you will participate in the following:

  Interviews lasting up to 30 minutes will take place during the course of one semester. The researcher will schedule interviews at a convenient location of your choosing between May 2018 and September 2018. During the data-gathering phase, the researcher will observe your design process several times and you will be asked questions regarding your experiences in an interview format. You will not have to do anything differently before or on the day of data gathering interviews.

  Specifically, you will be asked to answer questions related to your beliefs, actions, and reflections about autonomy in a blended learning environment, particularly related to your experience with the Leadership Pathways cohort of teachers. You are one of three of AISD Technology Design Coaches taking part in this study. Each Technology Design Coach will be presented with the same list of initial questions. All answers will be audio recorded, and only the researcher will have access to these recordings. These recordings will be destroyed five years after the conclusion of the study. Your name will not be used in written transcripts or in the final publication. You will have the opportunity to read the transcripts prior to publication, in order to

ensure the researcher accurately captured your responses. All audio files and transcripts will be destroyed three years after the end of the study.

You will also have the option to write a Lived Experience Description (LED) in which you will be given directions to assist your writing. These reflections, along with any other artifacts you may decide to share will also be part of the data gathering process. The researcher will ask you to review your interview texts to ensure accuracy, and allow for further discussion to take place.

- **RISKS/DISCOMFORTS**

This research is considered to be minimal risk. Federal regulations define minimal risk as "the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests." Thus, there are no known additional risks to those who take part in this study. In the unlikely event that some of the survey or interview questions make you uncomfortable or upset, you are always free to decline to answer or to stop your participation at any time.

- **BENEFITS/ALTERNATIVES**

There will be no direct benefit to you from participating in this study. However, the information that you provide will assist in providing potentially valuable insight into the development of future professional learning around blended learning.

- **EXTENT OF CONFIDENTIALITY**

Reasonable efforts will be made to keep the personal information in your research record private and confidential. Any identifiable information obtained in connection with this study will remain confidential and will be disclosed only with your permission or as required by law. The members of the research team, the funding agency, and the Texas State University Office of Research Compliance (ORC) may access the data. The ORC monitors research studies to protect the rights and welfare of research participants.

Your name will not be used in any written reports or publications, which result from this research. Data will be kept for three years (per federal regulations) after the study is completed and then destroyed.

- **PAYMENT/COMPENSATION**

You will receive no compensation for participating in this study.

- **PARTICIPATION IS VOLUNTARY**

You do not have to participate in this study. You may also refuse to answer any questions you do not want to answer. If you volunteer to be in this study, you may withdraw from it at any time without consequences of any kind or loss of benefits to which you are otherwise entitled.

- **QUESTIONS**

  If you have any questions or concerns about your participation in this study, you may contact the Principal Investigator, Erin Bown-Anderson: (512) 913-9001 or eeb43@txstate.edu.

  This project is approved by the Texas State Institutional Review Board (IRB). Pertinent questions or concerns about the research, research participants' rights, and/or research-related injuries to participants should be directed to the IRB Chair, Dr. Jon Lasser 512-245-3413 (lasser@txstate.edu) or to Monica Gonzales, IRB Regulatory Manager 512-245-2314 (meg201@txstate.edu).

DOCUMENTATION OF CONSENT

I have read this form and decided that I will participate in the project described above. Its general purposes, the particulars of involvement, and possible risks have been explained to my satisfaction. I understand I can withdraw at any time.

Printed Name of Study Participant	**Signature** of Study Participant	Date

Signature of Person Obtaining Consent	Date

APPENDIX B

Original Interview Protocol

The purpose of this study is to better understand the experience of designing a blended learning experience with the intent to make space for increased autonomy. Your experiences will be used to provide insight into understanding the what shifts happen when autonomy is a driver for design in learning. Your experience as a designer of a blended professional learning experience to support teachers' instructional shifts toward blended learning in their own classrooms uniquely positions you to reflect on how this cognitive task feels to both design and implement. You have been asked to participate because you are currently facilitating a multi-year professional learning on Transformational Technology and a shift toward blended learning and you are considered a master teacher with a minimum of 5 years of classroom experience.

We will engage in a series of interviews over the next few months. I have several questions prepared for each interview, and depending on our conversation and observations of the professional learning, the questions may lead to new questions or a deeper exploration of one of the questions.

Set #1: Setting the stage, building personal context, and exploring beliefs

1. How would you describe the purpose of education?

2. Can you recall a time when you felt a great sense of autonomy in your own learning experience? What was that like?

3. What role does autonomy have in the purpose education? What do you hear from the teachers you work with in Leadership Pathways that aligns with your own beliefs?

4. What was it like when you implemented a blended learning experience for the first time?

5. When you are designing a blended learning experience, what are key decisions you make? What is an example of a decision you often make in your learning design? How does enacting that decision make you feel as facilitator/designer?

6. All of your professional learning participants have access to their own device. What have you experienced with regard to autonomy that you directly connect to access to a device?

Set 2: Diving into Blended learning experiences with AUTONOMY

1. When you are designing for autonomy, how would you describe the *roles* do you assume in the implementation of that design? Describe an example of a role you played and how that manifested in the experience.

2. What strategies do you find yourself using to increase autonomy specifically in your learning environment? Why? Are there new approaches you have attempted? What was that like? Do you feel any tension between having a goal for the learning and attempting to increase autonomy?

3. Can you recall an experience where a participants' cultural background clearly played a role in the effectiveness of your design?

4. What experiences have you had that validate your design decisions (and encourage you to continue using them?)

5. What is something that has surprised you with regard to how students (or teachers) respond to autonomy in your blended learning environment?

Set #3: Probing for difference; Navigating nuances and challenges

1. Describe an experience of what you would consider one of your greatest blended learning success stories during the facilitation of Leadership Pathways.

2. What do you do, or what is your experience, when students demonstrate difficulty navigating increased autonomy, or choice?

3. Describe a time when designing for autonomy felt next to impossible. What was the barrier and how did that make you feel when you encountered?

4. Can you think of a specific time when you realized what you were doing (perhaps consistently or ritually) had to change? What was that moment like? What instigated that insight?

5. What is something (belief, practice, process, procedure) you have let go? What no longer serves you when designing for autonomy? What are some examples? How does it make you feel to imagine that now?

REFERENCES

Abel, N. (2016, February 17). *What is personalized learning?* Retrieved from iNACOL website: https://www.inacol.org/news/what-is-personalized-learning/

Agger, B. (1991). Critical theory, poststructuralism, postmodernism: Their sociological relevance. *Annual Review of Sociology, 17*, 105–131. https://doi.org/10.1146/annurev.soc.17.1.105

Allen, R. E. S., & Wiles, J. L. (2016). A rose by any other name: Participants choosing research pseudonyms. *Qualitative Research in Psychology, 13*(2), 149–165. https//doi.org/10.1080/14780887.2015.1133746

Baard, P. (2002). Intrinsic need satisfaction in organizations: A motivational basis of success in for-profit and not-for-profit settings. In E. Deci & R. Ryan (Eds.), *Handbook of self-determination research* (pp. 255–275). Rochester, NY: University of Rochester Press.

Biesta, G. (2015). What is education for? On good education, teacher judgment, and educational professionalism. *European Journal of Education, 50*(1), 75–87. https://doi.org/10.1111/ejed.12109

Blankson, K. L., Godwyll, F., & Awaleh, N. M. A. (2013). Innovative blended delivery and learning: Exploring student choice, experience, and level of satisfaction in a hyflex course. *International Journal of Innovation and Learning, 16*, 243–252. https://doi.org/10.1504/IJIL.2014.064728

Bliuc, A. M., Goodyear, P., & Ellis, R. A. (2007). Research focus and methodological choices in studies into students' experiences of blended learning in higher education. *Internet and Higher Education, 10*(4), 231–244. https://doi.org/10.1016/j.iheduc.2007.08.001

Bloomberg, L. D., & Volpe, M. (2016). *Completing your qualitative dissertation: A road map from beginning to end*. Los Angeles, CA: SAGE.

Broadbent, J. (2017). Comparing online and blended learner's self-regulated learning strategies and academic performance. *Internet and Higher Education, 33*, 24–32. https://doi.org/10.1016/j.iheduc.2017.01.004

Bug, L. (2018). *K-8 teacher blended learning professional development, NGSS, and communities of practice: A mixed methods study* (Doctoral dissertation). Available from ProQuest Dissertations. (10903629)

Butz, N. T., & Stupnisky, R. H. (2017). Improving student relatedness through an online discussion intervention: The application of self-determination theory in synchronous hybrid programs. *Computers and Education, 114*, 117–138. https://doi.org/10.1016/j.compedu.2017.06.006

Casquejo Johnston, L. M. (2016). Examining a Montessori adolescent program through a self-determination theory lens: A study of the lived experiences of adolescents. *Journal of Montessori Research, 2*(1), 27–42. https://doi.org/10.17161/jomr.v2i1.4994

Cheung, K. S., Lam, J., Lau, N., & Shim, C. (2010). Instructional design practices for blended learning. In *2010 International Conference on Computational Intelligence and Software Engineering*. https://doi.org/10.1109 /CISE.2010.5676762

Clifford, D. (2017, April 26). *Equity-centered design framework*. Retrieved from d.school website: https://dschool.stanford.edu/resources/equity-centered-design-framework

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage.

Crotty, M. (1996). *Phenomenology and nursing research*. Melbourne, Victoria, Australia: Churchill Livingstone.

Dahlberg, K. (2006). The essence of essences—The search for meaning structures in phenomenological analysis of perception and its epistemological consequences. *International Journal of Qualitative Studies on Health and Well-Being, 1*, 11–19. https://doi.org/10.1080/17482620500478405

Dahlberg, K., Dahlberg, H., & Nystrom, M. (2008). *Reflective lifeworld research* (2nd ed.). Lund, Sweden: Studentlitteratur.

Dam, R., & Siang, T. (n.d.). *5 stages in the design thinking process*. Retrieved from https://www.interaction-design.org/literature/article/5-stages-in-the-design-thinking-process

Dam, R., & Siang, T. (2019, March 3). *Design thinking: Get a quick overview of the history*. Retrieved from https://www.interaction-design.org/literature /article/design-thinking-get-a-quick-overview-of-the-history

Deci, E. (1995). *Why we do what we do: Understanding self-motivation*. New York, NY: Penguin Books.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum Press.

Deci, E. L., & Ryan, R. M. (2002). *Handbook on self-determination research: Theoretical and applied issues*. Rochester, NY: University of Rochester Press.

Deleuze, G., & Guattari, F. (1987). *A thousand plateaus: Capitalism and schizophrenia* (B. Massumi Trans.). Minneapolis, MN: University of Minnesota Press.

DeWalt, K. M., & DeWalt, B. R. (2011). *Participant observation: A guide for fieldworkers* (2nd ed.). Lanham, MD: AltaMira Press.

Drysdale, J. S., Graham, C. R., Spring, K. J., & Halverson, L. R. (2013). An analysis of research trends in dissertations and theses studying blended learning. *Internet and Higher Education, 17*(1), 90–100. https://doi.org/10.1016/j.iheduc.2012.11.003

equityXdesign. (2016, November 15). *Racism and inequity are products of design. They can be redesigned*. Retrieved from https://medium.com/equity-design/racism-and-inequity-are-products-of-design-they-can-be-redesigned-12188363cc6a

Eun, B. (2018). The zone of proximal development as an overarching concept: A framework for synthesizing Vygotsky's theories. *Educational Philosophy and Theory, 51*(1), 18–30. https://doi.org/10.1080/00131857.2017.1421941

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.

Flowerday, T., & Schraw, G. (2000). Teacher beliefs about instructional choice: A phenomenological study. *Journal of Educational Psychology, 92*(4), 634–645. https://doi.org/10.1037/0022-0663.92.4.634

Flowerday, T., Schraw, G., & Stevens, J. (2004). The role of choice and interest in reader engagement. *The Journal of Experimental Education, 72*(2), 93–114. https://doi.org/10.3200/jexe.72.2.93-114

Flowerday, T., & Shell, D. F. (2015). Disentangling the effects of interest and choice on learning, engagement, and attitude. *Learning and Individual Differences, 40*, 134–140. https://doi.org/10.1016/j.lindif.2015.05.003

Garrison, R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education, 7*, 95–105. https://doi.org/10.1016/j.iheduc.2004.02.001

Gerbic, P. (2011). Teaching using a blended approach – What does the literature tell us? *Educational Media International, 48*(3), 221–234. https://doi.org/10.1080/09523987.2011.615159

Gordon-Graham, C. (2014). Beginner's mind. *Therapy Today, 25*(5), 22–25.

Gorski, P. C. (2009). Cognitive dissonance as a strategy in social justice teaching. *Multicultural Education, 17*(1), 54–57. Available from http://www.caddogap.com/periodicals.shtml

Groenewald, T. (2004). A phenomenological research design illustrated. *International Journal of Qualitative Methods, 3*(1), 42–55. https://doi.org/10.1177/160940690400300104

Güzer, B., & Caner, H. (2014). The past, present and future of blended learning: An in depth analysis of literature. *Procedia - Social and Behavioral Sciences, 116*(5th World Conference on Educational Sciences), 4596–4603. https://doi.org/10.1016/j.sbspro.2014.01.992

Hadar, L. L., & Benish, W. M. (2019). Teachers' agency: Do their values make a difference? *British Educational Research Journal, 45*(1), 137–160. https://doi.org/10.1002/berj.3489

Hasso Plattner Institute of Design at Stanford University. (2019). *Design thinking bootleg*. Retrieved from https://dschool.stanford.edu/resources/design-thinking-bootleg

Herman, M. (2012). Creating balance in the new age of technology. *Montessori Life: A Publication of the American Montessori Society, 24*(3), 36–43. Available from https://amshq.org/Educators/Membership/Montessori-Life

Highlander Institute. (2017). *Highlander Institute Priority Practices Tool*. Retrieved from https://fuseri.highlanderinstitute.org/tools

Hoffman, M. C. (2018). Culturally responsive teaching—Part 2: Pedagogical considerations and teacher-student relationships. *Communique, 47*(3), 12–15. Available from https://www.nasponline.org/

Hooks, B. (2014). *Teaching to transgress: Education as the practice to freedom*. New York, NY: Routledge.

Horn, M. B., Staker, H., & Christensen, C. M. (2013). *Is K-12 blended learning disruptive? An introduction to the theory of hybrids*. Lexington, MA: Clayton Christensen Institute for Disruptive Innovation. Retrieved from https://www.christenseninstitute.org/publications/hybrids/

Horn, M. B., Staker, H., & Christensen, C. M. (2015). *Blended: Using disruptive innovation to improve schools*. San Francisco, CA: Jossey-Bass.

Hu, P., & Zhang, J. (2017). A pathway to learner autonomy: A self-determination theory perspective. *Asia Pacific Education Review, 18*(1), 147–157. https://doi.org/10.1007/s12564-016-9468-z

Huff, L. (2017, August 16). *5 ways to think like a designer, from an IDEO partner*. Retrieved from IDEO website: https://www.ideo.com/blog/5-ways-to-think-like-a-designer-from-an-ideo-partner

Hughes, T. P. (2004). *Human-built world: How to think about technology and culture*. Chicago, IL: The University of Chicago Press.

Ince, A. (2017). Managing risk in complex adult professional learning: The facilitator's role. *Professional Development in Education, 43*(2), 194–211. https://doi.org/10.1080/19415257.2016.1164743

Iyengar, S., & Lepper, M. (2000). When choice is demotivating: Can one desire too much of a good thing? *Journal of Personality and Social Psychology, 79*(6), 995–1006. https://doi.org/10.1037/0022-3514.79.6.995

Jackson, A., & Mazzei, L. (2012). *Thinking with theory in qualitative research: Viewing data across multiple perspectives*. New York, NY: Routledge.

Koh, J. (2014). The more, the better? Examining choice and self-regulated learning strategies. *International Journal of Learning, 21*(1), 13–32. https://doi.org/10.18848/1447-9494/cgp/v21/48743

Lai, M., Lam, K. M., & Lim, C. P. (2016). Design principles for the blend in blended learning: A collective case study. *Teaching in Higher Education, 21*(6), 716–729. https://doi.org/10.1080/13562517.2016.1183611

Lather, P. (2007). *Getting lost: Feminist efforts toward a double(d) science*. Albany, NY: State University of New York Press.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York, NY: Cambridge University Press.

Level. (n.d.). In *Oxford Online Dictionary*. Retrieved from https://en.oxforddictionaries.com/definition/level

Linton, J. (2018). *The blended learning blueprint for elementary teachers*. Thousand Oaks, CA: Corwin.

Little, T., Hawley, P., Henrich, C., & Marsland, K. (2002). Three views of the agentic self: A developmental synthesis. In E. Deci & R. Ryan (Eds.), *Handbook of self-determination research* (pp. 389–404). Rochester, NY: University of Rochester Press.

Lock, J., & Johnson, C. (2017). Learning from transitioning to new technology that supports online and blended learning: A case study. *Journal of Interactive Learning Research, 28*(1), 49–64. Available from https://www.learntechlib.org/primary/j/JILR/

Luo, T., Murray, A., & Crompton, H. (2017). Designing authentic learning activities to train pre-service teachers about teaching online. *International Review of Research in Open and Distributed Learning, 18*(7), 141–157. https://doi.org/10.19173/irrodl.v18i7.3037

MacDonald, G. (2016). Technology in the Montessori classroom: Benefits, hazards and preparation for life. *NAMTA Journal, 41*(2), 99–107. Available from https://eric.ed.gov/?id=EJ1112230

Maimaran, M. (2017). To increase engagement, offer less: The effect of assortment size on children's engagement. *Judgement and Decision Making, 12*(3), 198–207. Available from http://journal.sjdm.org/

Marton, F. (1986). Phenomenology: A research approach to investigating different understandings of reality. *Journal of Thought, 21*(3), 28–49. https://www.jstor.org/stable/42589189

Masny, D. (2016). Problematizing qualitative research: Reading a data assemblage with rhizoanalysis. *Qualitative Inquiry, 22*(8), 666–675. https://doi.org/10.1177/1532708616636744

McQuirter Scott, R., & Meeussen, N. (2017). Self-regulated learning: A touchstone for technology-enhanced classrooms. *Reading Teacher, 70*(6), 659–666. https://doi.org/10.1002/trtr.1564

Mezirow, J. (1997). Transformative learning: Theory to practice. *New Directions for Adult & Continuing Education, 74*, 5–12. https://doi.org/10.1002/ace.7401

Montessori, M. (1967). *To educate the human potential*. Madras, India: Kalakshetra.

Montessori, M. (1976). *Education for human development: Understanding Montessori*. New York, NY: Schocken.

National Research Council. (2012). *A framework for K-12 science education: Practices, crosscutting concepts, and core ideas*. Washington, DC: The National Academies Press.

Nicolaidou, M., Karagiorgi, Y., & Petridou, A. (2018). Professional learning through reflection promoted by feedback and coaching (PROFLEC) in Cyprus. *International Journal of Leadership in Education, 21*(4), 412–426. https://doi.org/10.1080/13603124.2016.1272718

Núñez, J. L., & León, J. (2015). Autonomy support in the classroom: A review from self-determination theory. *European Psychologist, 20*(4), 275–283. https://doi.org/10.1027/1016-9040/a000234

O'Donnell, M. (2013). *Maria Montessori: A critical introduction to key themes and debates*. London, England: Bloomsbury.

Ortiz Guzman, C. M. (2017). *equityXdesign: Leveraging identity development in the creation of an anti-racist equitable design thinking process* (Unpublished doctoral dissertation). Harvard Graduate School of Education, Cambridge, MA. Retrieved from http://nrs.harvard.edu/urn-3:HUL.InstRepos:33774659

Ozmet, E. W. (2018). Embracing vulnerability and risk in the classroom: The four-folder approach to discussion-based community learning. *The Journal of the Scholarship of Teaching and Learning, 18*(2), 136–157. https://doi.org/10.14434 /josotl.v18i2.22448

Patall, E. A., Cooper, H., & Wynn, S. R. (2010). The effectiveness and relative importance of choice in the classroom. *Journal of Educational Psychology, 102*(4), 896–915. https://doi.org/10.1037/a0019545

Patrick, S., Kennedy, K., & Powell, A. (2013). *Mean what you say: Defining and integrating personalized, blended and competency education*. Vienna, VA: International Association for K-12 Online Learning. Available from https://www.inacol.org/wp-content/uploads/2015/02/mean-what-you-say-1.pdf

Pedder, D., & Opfer, V. D. (2013). Professional learning orientations: Patterns of dissonance and alignment between teachers' values and practices. *Research Papers in Education, 28*(5), 539–570. https://doi.org/10.1080 /02671522.2012.706632

Pena-Shaff, J., & Altman, W. (2015). Student interaction and knowledge construction in case-based learning in educational psychology using online discussions: The role of structure. *Journal of Interactive Learning Research, 26*(3), 307–329. Available from https://www.learntechlib.org/primary/j/JILR/

Perry, B. D. (2017). *The boy who was raised by a dog and other stories from a child psychiatrist's notebook: What traumatized children can teach us about loss, love, and healing*. New York, NY: Basic Books.

Picciano, A. G. (2009). Blending with purpose: The multimodal model. *Journal of Asynchronous Learning Networks, 13*(1), 7–18. Available from https://onlinelearningconsortium.org/read/journal-issues/

Powell, M. (2016). Montessori practices: Options for a digital age. *NAMTA Journal, 41*(2), 153–181. Available from https://eric.ed.gov/?id=EJ1112216

Power, K., & Goodnough, K. (2018). Fostering teachers' autonomous motivation during professional learning: A self-determination theory perspective. *Teaching Education, 30*(3), 278–298. https://doi.org/10.1080/10476210.2018.1465035

Rivera, J. H. (2017). The blended learning environment: A viable alternative for special needs students. *Journal of Education and Training Studies, 5*(2), 79–84. https://doi.org/10.11114/jets.v5i2.2125

Rubin, S., & Sanford, C. (2018). *Pathways to personalization: A framework for school change*. Cambridge, MA: Harvard Education Press.

Russell, G. M., & Kelly, N. H. (2002). Research as interacting dialogic processes: Implications for reflexivity. *Forum: Qualitative Social Research, 3*(3), 209–223. https://doi.org/10.17169/fqs-3.3.831

Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality, 74*(6), 1557–1585. https://doi.org/10.1111/j.1467-6494.2006.00420.x

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York, NY: Guilford Press.

Schlechty, P. C. (2005). *Creating great schools: Six critical systems at the heart of educational innovation*. San Francisco, CA: Jossey-Bass.

Schlechty, P. C. (2011). *Working on the work: An action plan for teachers, principals, and superintendents*. San Francisco, CA: Jossey-Bass.

Schwartz, B. (2009). Incentives, choice, education and well-being. *Oxford Review of Education, 35*(3), 391–403. https://doi.org/10.1080/03054980902934993

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 125, pp. I–65). New York, NY: Academic Press.

Score. (n.d.). In *Oxford Online Dictionary*. Retrieved from https://en.oxforddictionaries.com/definition/score

Sergis, S., Sampson, D. G., & Pelliccione, L. (2018). Investigating the impact of flipped classroom on students' learning experiences: A self-determination theory approach. *Computers in Human Behavior, 78*, 368–378. https://doi.org/10.1016/j.chb.2017.08.011

Smith, T. (2018). Digital equity: It's more than just student access. *Tech & Learning, 39*(3), 22–29. Available from https://www.techlearning.com/magazine

Staker, H. (2011). The rise of K–12 blended learning. *Innosight Institute, 21*(May), 18. https://doi.org/10.1093/elt/ccq043

Stockless, A. (2018). Acceptance of learning management system: The case of secondary school teachers. *Education and Information Technologies, 23*(3), 1101–1121. https://doi.org/10.1007/s10639-017-9654-6

Thibaut, P., Curwood, J. S., Carvalho, L., & Simpson, A. (2015). Moving across physical and online spaces: A case study in a blended primary classroom. *Learning, Media and Technology, 40*(4), 458–479. https://doi.org/10.1080/17439884.2014.959971

TNTP. (2018, September 25). *The opportunity myth*. Retrieved from https://tntp.org/publications/view/student-experiences/the-opportunity-myth

Turnbuckle. (n.d.). In *Oxford Online Dictionary*. Retrieved from https://en.oxforddictionaries.com/definition/turnbuckle

Vagle, M. D. (2014). *Crafting phenomenological research*. Thousand Oaks, CA: Left Coast Press.

Vagle, M., & Hofsess, B. (2016). Entangling a post-reflexivity through post-intentional phenomenology. *Qualitative Inquiry, 22*(5), 334–344. https://doi.org/10.1177/1077800415615617

Vallerand, R. & Ratelle C. (2002). Intrinsic and extrinsic motivation: A hierarchical model. In E. Deci & R. Ryan (Eds.), *Handbook of self-determination research* (pp. 37–63). Rochester, NY: University of Rochester Press.

van den Berg, R. (2002). Teachers' meanings regarding educational practice. *Review of Educational Research, 72*(4), 577–625. https://doi.org/10.3102/00346543072004577

Van den Broeck, A., Ferris, D. L., Chang, C.-H., & Rosen, C. C. (2016). A review of self-determination theory's basic psychological needs at work. *Journal of Management, 42*(5), 1195–1229. https://doi.org/10.1177/0149206316632058

Van Laer, S., & Elen, J. (2017). In search of attributes that support self-regulation in blended learning environments. *Education and Information Technologies, 22*(4), 1395–1454. https://doi.org/10.1007/s10639-016-9505-x

van Manen, M. (2016). *Phenomenology of practice: Meaning-giving methods in phenomenological research and writing*. New York, NY: Routledge.

Vygotsky, L. S. (1934/1962). *Thought and language*. Cambridge, MA: MIT Press.

W3c_wai. (n.d.). *Web content accessibility guidelines (WCAG) overview*. Retrieved from https://www.w3.org/WAI/standards-guidelines/wcag/

Waite, D. (2014). Teaching the unteachable: Some issues of qualitative research pedagogy. *Qualitative Inquiry, 20*(3), 268–281. https://doi.org/10.1177/1077800413489532

Way, A. K., Zwier, R. K., & Tracy, S. J. (2015). Dialogic interviewing and flickers of transformation: An examination and delineation of interactional strategies that promote participant self-reflexivity. *Qualitative Inquiry, 21*(8), 720–731. https://doi.org/10.1177/1077800414566686

Wheatley, K. F. (2002). The potential benefits of teacher efficacy doubts for educational reform. *Teaching and Teacher Education, 18*(1), 5–22. https://doi.org/10.1016/S0742-051X(01)00047-6

Yoon, C., & Rolland, E. (2012). Knowledge-sharing in virtual communities: Familiarity, anonymity and self-determination theory. *Behaviour and Information Technology, 31*(11), 1133–1143. https://doi.org/10.1080/0144929X.2012.702355

Zheng, L. (2016). Does online perceived risk depend on culture? Individualistic versus collectivistic culture. *Journal of Decision Systems, 26*(3), 256–274. https://doi.org/10.1080/12460125.2017.1351861