ADULT LEARNERS AT COMMUNITY COLLEGES: INFLUENCE OF TECHNOLOGY ON FEELINGS OF MARGINALITY AND MATTERING

By

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ABSTRACT

ADULT LEARNERS AT COMMUNITY COLLEGES: INFLUENCE OF TECHNOLOGY ON FEELINGS OF MARGINALITY AND MATTERING

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Adult learners represent a population of students in community colleges who may be underserved or marginalized by digital technology. Because community colleges have implemented significant digital technologies to improve efficiency, communication, and overall operations, interacting with platforms (such as course management systems, student information systems, email clients, touch screen kiosks, and virtual/videoconferencing) is unavoidable for the adult learner currently enrolled. The purpose of the study was to examine and understand how technology made adult learners feel in their overall educational experiences at community colleges. I used qualitative research methods to interview 24 adult learners at 2 community colleges in the Midwestern region of the United States. I also interviewed individuals involved with the decision and implementation process of technology at both institutions. In the study, I used ethnographic approaches to examine the digital and technological culture at each institution, beginning with the prospective student phase and leading up to the matriculation process of a success student.

My study showed that adult learners are willing and able to learn technology, but they are less likely to teach themselves than younger users how to use all the required technology without experiencing frustration, anxiety, and fear. Frustration often arose from changes in educational technology since previous enrollments, and how technology had changed participation expectations. Also, as course content was often held in digital platforms, adult learners shared frustrations of having to learn first the technology medium before course content, evidence of

technology being an implied prerequisite for educational success. Anxiety arose from significant assumptions having been made about adult learners, including computer ownership, internet access, available time for remote participation, and ability to navigate the dozens of systems implemented in higher education. Study participants often reported fear of breaking technology in a way that would be irreparable, expensive, and damaging to their academic progress, describing that fear as deeply rooted in previous experiences when they were first exposed to computers.

In my study I identify the ways in which forced technological interactions marginalize adult learners through a framework of marginality and mattering. In addition, I argue for support mechanisms to benefit adult learners, and all students, through reconsidering the role of technology in the overall experience, curriculum, institutional research agenda, as a necessary literacy for success at community college. The study does not set out to argue against using technology in education, only to filter expectations through nuanced understanding of the students who will be using and interacting with such technology in their lives as community college students.

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On the title page, there is only one name of one person, which is the biggest lie I've learned in graduate school. Dissertations are not written by a single person, they are written by a community standing behind the one name on the title page. My community was filled with people who deserve to be named.

For the tired, frustrated, busy, yet motivated, capable, and inspiring students who gave their time and stories to my research, I hope to do justice to everything you shared with and volunteered to me. I started out wanting to know if technology would make any of you fail to meet your goals, and learned that you will succeed in spite of technology. I will share your wisdom with others who need it.

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My father's eyes bring me solace,

And his look of focus I try to instill.

There are two girls

With whom I've known longer than anyone,

And my debt to them is lifetime.

The gathering of boys I rely on,

Know exactly who they are

And I will build their protection with bloody hands.

"Song for the Fisherman" – 36 Crazyfists

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CHAPTER 1: INTRODUCTION

Research on factors of student success in higher education has spanned several decades, yet scholars are still seeking a fuller understanding of what elements of the community college experience influence students' growth toward educational outcomes. Scholarship on student success has led to many threads of research, including the significance of students connecting to their institution. College students are vulnerable to feeling marginalized on their campuses (Schlossberg, 1989), and students who feel unvalued and unimportant to their institution are less likely to achieve their educational desired outcomes (Tinto, 1987, 1993). Within a marginality and mattering framework (Schlossberg, 1989), students can become vulnerable when in a new context, especially when they are not central to the environment or feel they are not of the population for whom the context was intended (Schlossberg, 1989). The increasingly technological college experience creates a particular educational context, one which requires a different skill set from previous generations of campus environments. The potential marginalization such a change could create is relatively unexplored when specifically considering adult learners. Many of the students who make up the adult learner group were born and raised before the proliferation of computers and other digital technologies.

I studied adult learners at community colleges and their reported feelings of marginality and mattering in reaction to technology within the educational experience. The topic is especially salient as the adult learner population has been defined as less skilled and comfortable using digital technologies, because of a lack of either experience (Prensky, 2001a) or motivations (Horrigan, 2007, 2009). The term "adult learner" refers to students older than the traditional college-going age of 18 to 24 years (Horn & Carroll, 1996). As the college experience continues to require more interaction with technology (everything from applying for admission online to

paying for parking at touch screen kiosks), understanding the effect of technology on students will continue to be an important pursuit (Foster, 2004). The available literature does not show any campuses that assess the adult student population's skill level when making technology related decisions, despite adult learners being a significant proportion of students in higher education (Kelly & Strawn, 2011). Schlossberg's (1989) theory of marginality and mattering presents adult learners as a student population that is very sensitive to interactions with and decisions of their educational institutions.

Major Terms and Concepts

I used the following consistent definitions of core concepts in the study: adult learners, the digital divide, andragogy, and digital technology. I examine these topics in more detail in Chapter 2. For the purposes of my study, defining and understanding adult learners is very important. I used Horn and Carroll's (1996) definition of adult learners as students in postsecondary education who are over age 25 and who have additional responsibilities not typical of traditional aged college students (e.g. delayed enrollment, part-time enrollment, full-time employment, being financially independent, having legal dependents, being a single parent, or not having a high school diploma). The life experiences and responsibilities of adult learners are important characteristics as they establish how many adult learners are unable to categorize their education as a high priority (Pusser, et al, 2007). I also used the learning theory andragogy as part of the study context. Andragogy is a philosophical position and learning theory that considers adult learners to be a student population with unique motivations, needs, and perspectives from traditional aged students (Knowles, 1974). Similar to the definition of adult learners from traditional aged students presented by Horn and Carroll (1996), Knowles (1974) described how a learner's life situation is a defining factor in how they encounter and experience

learning. In brief, both the concepts of adult learners and andragogy establish that older students experience education and learning different from traditional aged college students, and thus are worthy of and important to my study.

Parallel to the age difference between adult learners and traditional aged college students is the concept of a digital divide. A simple definition of a digital divide is formed through Tapscott's (1998) and Prensky's (2001a, 2001b) commentaries, that individuals who grew up with digital technology are different from those who did not. The year 1980 is a common touchstone used to describe when a digital divide began, as those born after 1980 had much more access to personal computers and the internet than those born before. What the digital divide concept contributes to the study is an espoused delineation in technological ability or literacy between younger and older students. While not without exceptions, a digital divide in this context is also a generational one, as the difference hinges on the amount of access and attitude toward available technology to varying generations and the idea that individuals who have had meaningful access to computers and internet from a young age have very different technological experiences and learning (Bennett, Maton, and Kervin, 2008; Tapscott, 1998; Thompson, 2013).

While foundational to the debate of digital literacy differences by generation or age, the digital immigrant and native typology is limited. An alternative perspective is to reframe the technological gap as visitors and residents, a concept presented as a challenge to Prensky's typology by White and Le Cornu (2011). While not a complete parallel of Prensky's ideas, White and Le Cornu (2011) describe a continuum made up of visitors and residents of online and digital technologies. For visitors, the internet is a collection of tools and resources, and online behavior is often purposeful and task oriented. Residents view technology as an online collection of networks behaving as a community. The addition of a continuum as presented by

White and Le Cornu (2011) allows for a more careful and specific understanding of how users of different ages and experience levels approach and use technology. I include their considerations in my application of Prensky's typology through my inclusion of ideas of connectivism as a networked learning theory and interpretation of some of my findings that exposure to and experience with technology matter more than the age of computer users.

In order to understand how digital technology creates a divide, it is necessary to frame what is considered digital technology in educational contexts. While often defined narrowly to include only instructional and classroom technologies, limiting the scope of educational technology to that which only supports formal learning is insufficient (Saettler, 2004). A more inclusive definition was created by The Association for Educational Communications and Technology (AECT) to define educational technology as a field of study and practice of "facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (Richey, Silber, & Ely, 2008, p. 24). The AECT definition broadens what educational technology is to also include both systems and philosophies behind technological implementations with which students interact in the process of being learners (Richey, et al., 2008). The interactions of students with various technologies on both the physical and virtual campus environments are the contexts on which my study focuses.

Statement of the Problem

Enrollment of adult learners and implementation of technology are increasing in community colleges, however it is not known how technology affects the experiences of adult learners. In higher education, adult learners make up a large portion of undergraduate enrollment with over 8.5 million students and approximately 41% of the total student enrollment (National Center for Education Statistics [NCES], 2014). Their enrollments are growing at twice the rate of

students under the age of 25, with the adult learner population having increased by 35% from 2000 to 2012, and being predicted to increase by 20% by 2023, compared to the projected traditional age student enrollment growth of 12% (NCES, 2014). In order for these students to be successful, they must be able to effectively learn and navigate institutions that are increasingly implementing digital technologies. If a large proportion of students at an institution could not write well enough to complete campus assignments, a writing assistance center would likely be created. However, if a similar proportion of students could not navigate and use an institution's digital technology, would a technological tutoring center be considered? While help desk hotlines and services that help troubleshoot and fix problems are available to provide technological assistance for staff and students, I cannot assume that such a service is comparable to a program that would educate users on how to utilize various technologies. Technology skills are necessary for success in postsecondary education and the modern work force (Romano & Dellow, 2009), but is the amount of technology required to navigate the educational experience a barrier to success for adult learners at community college?

There is abundant research on the subject of the potential benefits of educational technology, which as a whole is generally optimistic and argues for technology improving academic outcomes and enhancing the overall college experience (Gikas & Grank, 2013; Jones, 2015; Kauffman, 2015; Ke & Kswak, 2013; Manca & Ranieri, 2016; Teo, 2013). However, few scholars consider the impact of this movement from the perspective of students at the margins of the traditional collegiate experience, in this case adult learners. Perhaps the use of virtual office hours with campus offices or faculty provides additional access and opportunity for adult learners to fit their educational needs within a very busy schedule. Or maybe institutional implementation of technology creates a culture that communicates access to the internet as

central to the student experience, assuming that all adult learners have consistent and reliable internet access. While either or both of these scenarios may be true, there is little empirical evidence demonstrating the effect implementation of policies, curriculum, and practice that shape the technological landscape for students at community colleges. There is also no literature about the way that increased technology in the educational experience influences feelings of marginalization and mattering of adult learners.

While technology continues to evolve and change, administrators and educators should be cognizant of older students' comfort and skill levels with it. Adult learners are often categorized as "digital immigrants," or those who matured before the popularity of personal computers and the internet (Prensky, 2001a, 2001b). In juxtaposition to the "digital immigrants" are the "digital natives" are people who grew up with digital technology and born after 1980 (Prensky, 2001a, 2001b; Tapscott, 1998). Even with the population of digital immigrants becoming smaller every year in comparison to the growing number digital natives, adult learners still represent a significant portion of the population at community colleges. The adult learner population will continue to enroll in higher education for the foreseeable future, often turning to community colleges for education, retraining, or lifelong learning (Kelly & Strawn, 2011).

When making decisions to meet the espoused needs of digital natives, the digital divide grows, as those students who do not fit the skills and abilities as defined through digital natives are marginalized by technology (Bauerlein, 2011; Bennett, Jones, 2015Maton, & Kervin, 2008, McHaney, 2011). It is relevant to acknowledge that there was a robust debate present in the literature about whether or not digital natives are as adept at technology as is sometimes assumed (Bennett & Maton, 2010; Brown & Czerniewicz, 2010; Vaidhyanathan, 2008). While traditional-aged college students (current and future) were not the focus of this study, the debate

surrounding the technological ability of the younger generation supports my argument that it is important to explore and evaluate the impact of digital technology on the educational experience and progress toward success.

Any potential effects of digital technologies on adult learners are compounded at the community college level. Community colleges are typically open-access institutions that remove many of the barriers to postsecondary education (specifically those associated with an achievement-based admissions process) by offering open enrollment and low cost (Meier, 2013), but a consequence of open-access missions is a very wide range of student readiness for higher education. Underprepared students can enroll in courses at a community college more easily than they can at most four-year institutions that require an assessment of academic ability before admission. Community colleges are therefore an attractive educational opportunity for adult learners and other nontraditional students, especially those who are "disadvantaged" because of other limiting factors, including socioeconomic status, familial expectations, cultural or language backgrounds, and, for some mental and physical ability (Levin, 2007).

The disadvantaged student is a category established by Levin (2007) to "differentiate this population from the common conceptions of nontraditional students, who may be simply an older population that is over twenty-four years of age" (p. 11). Similar to the adult learner conditions described by Horn and Carroll, (1996), Levin's (2007) distinction is important as it combines the parameter of age with the status of a student to describe potential obstacles to access to education. Given the difference in the student experience and overall characteristics of adult learners when compared to traditional aged students, all older students are considered disadvantaged in postsecondary education (Levin, 2007). However, as Levin (2007) argues, providing access to education does not necessarily mean providing accommodation, meaning

that the institutions may not be providing adequate services to improve the disadvantaged status of adult learners. If digital literacy becomes an expectation of students, then adult learners may be disadvantaged in Levin's (2007) use of the term because of similar limitations that prevent an adult learner from entering college with a proficient level of digital literacy. Being a disadvantaged adult learner in relation to preparedness for digital technology could lead to feelings of marginalization within that context, causing adult learners to feel as though they are not the students for whom the campus was intended to serve.

Adult Learner Success

Technological and digital literacy of adult learners at community colleges is undoubtedly varied but largely not assessed. The available literature about the technological ability of adult learners focuses primarily on classroom and course contexts (see Ebner, et al., 2010; Elavsky, Mislan, & Elavsky, 2011; Gikas & Grant, 2013), not the overall student experience, which involves online class registration, student information systems, and digital communications. The potential impact of technology on adult learner success needs to be examined, with an understanding that student success is a complicated issue. Defining student success based simply on graduation rates is incomplete and insufficient for the community college model (Baldwin, Bensimon, Dowd, & Kleiman, 2011; Goldrick-Rab, 2010). Not all community college students apply, enroll, and attend with the expectation of earning a degree or certification from that institution (Baldwin, et al., 2011). More complete considerations of student success refine the graduation rates model to one of persistence, which considers matriculation from one course to another, semester to semester, or from one institution to another (Baldwin, et al., 2011, Bragg & Durham, 2012; Goldrick-Rab, 2010).

In 1991, Bers and Smith found models of success centering on graduation rates to be inappropriate for community colleges, and measured student success through persistence, in particular how the student's intentions and integration into the campus experience affect persistence from one term to the next. Bers and Smith (1991) argued that, even three decades ago, measuring the success of community college students (who on average did not meet the definition of traditional college student) required a rejection of assumptions about what success is. For Bers and Smith (1991), student success could be predicted by examining interactions between the student and campus, specifically the manner in which a student integrates into both the social and academic aspects of the college experience. Models measuring success through interaction with the campus environment and opportunities are common, including Astin's (1984) involvement theory and Kuh's (and Associates, 1991) theories of student engagement. At the core of the engagement argument is the position that when students become connected to campus, they are more likely to be successful (persist and graduate) (Kuh, 2003). And on an even more specific level, the degree to which students feel as if they matter to the campus, within a framework of community and connection, is a strong predictor of whether or not they will be engaged with their campuses and learning (Schlossberg, 1989; Schlossberg, LaSalle, & Golec, 1990).

As mentioned earlier, persistence from one semester to the next and from one course to the next iteration of that course, such as progressing from one mathematics course to the next level, is a better measure of success than graduation rates for adult learners at community colleges. More precise persistence metrics that measure matriculation from one course and semester to another acknowledge the diverse motivations that drive adult learners to attend (Baldwin, et al, 2011). However, many factors of adult learner persistence at community colleges

are under examined, such as the requirement to use and be proficient with technology, specifically digital technologies that require computers and the internet. As the number of adult learners enrolled at community colleges rises, the amount and type of technology implemented also increases. These trends are separate from one another, but they intersect within the adult learner student experience. For example, institutions are continuing to employ more technology to enhance, simplify, or increase efficiency of various aspects of the college experience (learning management systems, creation of virtual campuses, social media, mobile learning, etc.) (Jones, 2010), yet little knowledge exists to support the argument that such implementations provide positive effects for adult learners at community colleges.

Technology and the College Experience

Because of increased digital implementations, institutions are creating campus systems that are difficult to successfully navigate for those less skilled with digital technologies. Some studies have provided cursory findings that technology can provide opportunities and obstacles for adult learners. For example, technology can provide greater flexibility and access to college and resources and teach skills necessary to reenter to the workforce (Brooks, 2013), but technology also requires consistent computer and internet access and a baseline skill level. Also, if technology is viewed as intimidating, it may lead to adult learners feeling anxious and disconnected from the institution (Brazelton, 2013; Brooks, 2013; Clemente, 2010; Jones, 2010; Watson, 2012). However, no study has sought to examine how technology influences feelings of marginality of adult learners at the community college level specifically, and this study proposes to do just that. With adult learners defined as having fewer advantages (Levin, 2007) and at a higher risk of failure than traditional aged students (Horn & Carroll, 1996), the possibility of adult learners feeling further marginalized by their institutions is an important concern.

Many scholars and educators have pointed toward the benefits of educational technology, though their work is primarily focused on traditional age students or without a control for age (for examples of frequently cited studies see Ebner, et al., 2010; Elavsky, et al., 2011; Junco, et al., 2010; Lowe & Laffey, 2011). A limited number of researchers are beginning to ask the question of whether adult learners are better served by increased technology in their educational settings, but these studies are focused only on classroom contexts (Jones, 2010). As older students typically have lower digital skill and comfort levels (Horrigan, 2007, 2009), adult learners are likely to have a very different experience in higher education because of institutional use of technology and "thus technology has the potential to stratify student populations in the same way that it perpetuates divisions outside of postsecondary education" (Levin, 2007, p. 84).

Community colleges are experiencing the same technological trends as the rest of higher education, such as exploring and implementing possibilities of e-learning, virtual campuses, Learning Management Systems, and digital student services (Ramage, 2011). While the amount of technology implemented varies from institution to institution, it is reasonable to assume that all students must use some sort of modern technology in order to fully access the whole of opportunities at their respective schools (Treat, 2011a, 2011b), such as viewing the academic or extracurricular calendar, searching for student organizations, and determining office hours of various student services. For example, the lack of a printed phone directory for faculty, staff, and offices available at every campus requires the ability to use an online directory to find phone and office numbers. A student's ability to access and manage the institution's technology could influence the likelihood of success at that institution, where success could range from student engagement measures (campus engagement, sense of belonging, access to campus services and opportunities) to academic measures (matriculation and retention, graduation, interaction with

faculty). These factors led the late Lenoar Foster to ask the question in 2004 “What factors might inhibit access to the community college during the next phase of technology integration?” (p. 73). Since Foster (2004) raised the issue, the technology landscape has changed dramatically and community colleges need to consider the impact of technology on the educational experience more than ever before.

Schlossberg’s (1989) theory of marginality and mattering, based on adult learners, provides the necessary foundation to connect digital technology, community colleges, and the adult learner’s educational experience by centering on the student’s interaction with the institution. The theory of marginality and mattering explains how the decisions and environment of an institution can affect how an adult learner feels about their value to the institution (Schlossberg, 1989; Schlossberg, Lynch, & Chickering, 1989). Adult learners who are less capable or comfortable using technology at their community college may feel undervalued. Older community college students in my pilot study reported that the assumptions of their ability to use social media for class discussion caused frustration with both the technology and the instructor (Brazelton, 2013). Technology can have an effect on how adult learners view their educational experience and how they see their place at the institution.

I examined adult learners’ interactions with technology and how these interactions may influence their feelings of marginality and mattering (Schlossberg, 1989). Interacting with technology is a requirement at nearly every stage of the adult learner experience. For example, an adult would have to go online to research programs and courses, apply for admission, enroll, participate in classes, submit assignments, and ultimately apply for transfer or graduation. In my pilot study on the experience of community college adult learners with classroom social media requirements, several factors influenced the adult learners’ ability to be successful in class:

having limited internet/computer access, difficulty learning social media platforms, and struggles identifying support to assist in learning how to navigate online systems required for class participation (Brazelton, 2013). Other studies reported that both adult learners and community college faculty described technology as a source of anxiety and fear (Brooks, 2013; Jones, 2010). The anxiety stemmed from concerns of access and especially of varying levels of technological literacy (Jones, 2010).

Other studies support the findings that adult learners need different, and sometimes separate, sources of support and learning in order to succeed in specific academic contexts with digital technology, such as learning Microsoft Office software (Pachman & Ke, 2012), navigating online class systems and modules (Rivera-Nivar & Pomales-García, 2010), engaging in online discussions as meaningful class contact (Ke, 2013), and developing self-efficacy and confidence within internet based contexts (Chu, 2010; Chu & Tsai, 2009). These studies demonstrate that technology in classroom contexts does affect the experiences of adult learners differently from traditional age students; however the broader student experience that extends beyond the classroom is still unexplored. Schlossberg, et al. (1989) proposed that adult learners' ability to manage their academic lives and expectations of learning due is related to their feelings of marginality or mattering. Adult learners in academic settings often desired caring environments where "the learners were made to feel that their special needs for information, guidance, and encouragement were perceived and that the institution, through its individual representatives, cared about those needs" (Schlossberg, et al., 1989, p. 106). Students from Schlossberg's (1989) study who felt marginalized in the classroom felt marginalized by the whole of the institution.

Purpose and Research Questions

My study examined and described how adult learners' interactions with technology influence their feelings of marginality and mattering (Schlossberg, 1989). Of specific interest to the study were the ways institutional technological culture and interaction between adult learners and technology influences feelings of marginality and mattering. I centered my study with the following research questions:

- How does technology influence how adult learners feel valued, welcome, and important on their community college campus?
- Do adult learners who report higher or lower feelings of confidence and competency with technology describe higher or lower feelings of satisfaction and feeling valued/important to their institution?
- How does the way a campus establishes/communicates its technological expectations/services/systems create a culture of assumed technological literacy?

  How does the digital campus culture affect the adult learner's college experience?

Through a framework of marginality and mattering, I examined the ways digital technology affects the educational experience of adult learners at community colleges. I used interviews with adult learners at two community colleges, conversations with institutional faculty and staff, and examination of the technological culture and digital environment of each college.

Conceptual Framework

Given the diversity of adult learners as a student population, and the number of factors that have an effect on their collegiate experience, it is difficult to select only one scholarly perspective for a conceptual framework. I employed two theories to provide both the foundational framework and structure of the study design: Prensky's (2001a, 2001b) concept of

digital natives and digital immigrants, and Schlossberg's (1989) theory of student marginality and mattering.

Digital Natives and Immigrants

Researching adult learners as a distinct student population from traditional age students positions the study as generational and employs the concepts of digital natives and digital immigrants. In Prensky's (2001a, 2001b) typology, the landscape of digital learning consists of those who were born after the advent of the internet (digital natives) and those who were born before this point (digital immigrants). Prensky posits that this generational and digital gap is one of language and learning, where the natives learn more intuitively how to navigate and employ digital technologies and the immigrants require more time, access, and sometimes a translation, in order to learn digital technology. This tension is foundational to my study as it illustrates the digital and generational knowledge gap between traditional aged college students and adult learners (a richer discussion of the digital native and digital immigrant typology is included in Chapter 2).

At the center of the argument about adult learners and their ability to use, interact with, and navigate digital technologies is an assumption that the act of learning how to acquire digital technology skills is experiential. In the discussion of the digital native/digital immigrant debate, digital natives learn their technological skills and abilities by being interested in the technology, by using the technology, and by employing intuition (provided by the illustrative nature of the graphic user interfaces [GUIs] employed by digital technology). For instance, while many digital natives may have never used a 3.5 or 5 inch floppy disk to save a file, the icon of the disk represents the act of saving the file for future access. Also, digital natives have been encouraged to learn the technology simply by using it, with mistakes and success being an expected part of

the learning process (Bennet & Matton, 2010). Learners labeled as digital immigrants require more explanation and instructions, and having first encountered computers as adults feel less free to explore and make mistakes, as such technologies were often very expensive, fragile, and viewed as tools and not toys (Kennedy, Judd, Dalgarno, & Waycott, 2010).

An overall important distinction between digital natives and immigrants is whether or not they have grown up or developed cognitively with access to technology, specifically computers and the internet (Prensky, 2001a; Tapscott, 1998). However, this distinction does not imply that the digital or knowledge gap is also an intelligence gap. Nicholas Carr's 2010 book, *The Shallows: What the Internet is Doing to Our Brains*, describes how using the internet has changed human behavior, but is an argument of the mind and not the brain. Adult learners are capable of learning new skills and so digital immigrants are not less intelligent than digital natives, they are only typically less technologically skilled and learn these skills differently from their younger counterparts.

Prensky's (2001a, 2001b) typology speaks to learners in general, where learning takes place both within and beyond the boundaries of formal education. However, multi-generational student populations at community colleges provide a large case study of groups of learners who can be classified as either digital natives or digital immigrants. As a digital immigrant, an adult learner might feel unwelcome in digital domains. Adult learners have reported to researchers feelings of anxiety over educational technology, especially those that require or facilitate interaction in multi-generational settings (Brazelton, 2013; Brooks, 2013; Clemente, 2010). Prensky's typology (2001a, 2001b) illuminates but does nothing to ameliorate these feelings, so I include Nancy Schlossberg's (1989) work on marginality and mattering to frame the

psychological aspects of the student experience in connecting with campus and the overall educational experience.

Marginality and Mattering

The concept of marginality and mattering arose out a missing piece of the student engagement model, specifically the need to include an individual's feelings of self-worth within the educational environment. Schlossberg (1989) presented marginality and mattering as a spectrum, where the two terms are reflected as polar positions of an individual's feelings of value. Schlossberg with colleagues LaSalle and Golec (1990) felt that mattering applied to all students, but developed and validated a scale of mattering specifically with adult learners as the study population. Marginality refers to a number of possible permutations of feeling out of place, or where one is no longer central to the environment, including both temporary and permanent conditions in which an individual feels disconnected or insignificant within and to the environment. Those who feel marginalized feel as if their experiences are far from the center of the environment, that they are not for whom the experience was designed (Chaves, 2006). Feeling marginal can lead to feelings of invisibility, higher likelihood to feel depressed, and higher levels of self-consciousness (Schlossberg, 1989). Schlossberg claimed that everyone may feel marginal at one time or another, and that feeling marginal negatively influences mattering.

While marginality describes conditions of being that negatively affect whether or not an individual feels valued at an institution, Schlossberg presented the concept of mattering as the way that institutions can reduce and prevent feelings of marginality. Mattering encompasses feelings of significance and value, "the beliefs people have, whether right or wrong, that they matter to someone else, that they are the object of someone else's attention, and that others care about them and appreciate them" (Schlossberg, Lynch, & Chickering, 1989, p. 21). Mattering is

an area in which higher education institutions can affect the educational experience of the student directly. Mattering consists of five dimensions: attention (being noticed), importance (feeling cared about), ego extension (that others will take pride in one's accomplishments), dependence (feeling needed), and appreciation (where one's contributions are valued) (Schlossberg, 1989). These five elements of mattering require human interaction in order to take place. The student needs to feel validated through the five dimensions in order to believe she matters, but it takes an observer, another person, to fulfill the contexts of the dimensions. It is within this space of interaction that Schlossberg's marginality and mattering frames my study on adult learners and technology. While many forms of technology mediate a human-to-human interaction, others may simulate or replace human-to-human interaction.

With the implementation of student information systems, learning management systems, and communication platforms as baseline technologies (digital or virtual technologies with which a student must interact in the academic experience), to be a student today is to be digital. For adult learners, technologically mediated or simulated interactions could very well be a drastic change from their non-academic lives, or even their previous educational experiences. Positioning this change in contexts allows for the use of Schlossberg's marginality and mattering (1989) as a way of understanding transitions in adult learners lives, where they may have been centered in a previous context but feel marginalized in the educational setting. As some scholars have found, adult learners in community colleges do report the digital environments of college as transitions that can be difficult or opportunistic, but large transitions nonetheless (Brazelton, 2013; Brooks, 2013; Clemente, 2010; Jones, 2010).

Conclusion

I studied these converging factors: adult learners, community colleges, and technology. The intersection of these factors will continue to be a pressing issue in higher education, as adult learner enrollments are projected to continue both in number and proportion, institutions will implement more and different technologies as advancements occur, and community colleges will grow as an important player in the credentialing of the work force. The study focused on the interaction among these factors and the likelihood of adult learners feeling marginal or as though they matter on their campuses. Explaining the interaction between technology and being valued is not to argue against the use of digital advancements in higher education, as scholars have indicated that learning how to use digital technologies is an important skill for entering (or re-entering the work force (Bajt, 2011; Dinevski & Radovan, 2013; Hayes, 2007; Ramage, 2011; Romano & Dellow, 2009).

My study researched how technology in the community college experience affects feelings of marginality and mattering of adult learners. Increased knowledge of how adult learners experience and interact with technology on campus can create support mechanisms and services to decrease the likelihood of technological interactions marginalizing students and increase opportunities to facilitate mattering. As adult learners were the primary population used when Schlossberg, LaSalle, and Golec (1990) studied to create and validate theories of marginality and mattering, they are already within the scope of consideration of how marginalization factors can influence the educational experience of an older student because of their differences from the traditional college aged student.

When considering the technological skill level, or digital literacy, of an adult learner, assuming that all students have a particular level of comfort, ability, and motivation to utilize

technology can lead to discomfort, alienation, and confusion for adult learners (Brazelton, 2013; Clemente, 2010). The concern with all marginalization in postsecondary education is how students who feel they are at the margins of the environment will not be as successful as those for whom the experience was intended. Adult learners are already marginalized in postsecondary education as has been demonstrated in this chapter, and a digital divide in confidence and ability can push older students even further to the margin. If adult learners are not as prepared to use technology and navigate digital systems, then implementations of additional technology to mediate their interactions with the institution may lead to increased marginalization. Therefore, community colleges have an opportunity to both address the technological literacy of the adult learners and make students feel that they matter to the institution. Schlossberg, Lynch, and Chickering (1989) urged colleges to seize this opportunity because "when institutions treat adult learners as they matter, when we create educational programs to help students move in, move through, and move on, the payoffs for adult learners will be impressive" (p. 209).

The second chapter of my dissertation focuses on exploring literature on key concepts to understanding the experiences of adult learners at community colleges. These topics are marginality and mattering, adult learners in higher education, student success at community colleges, the digital divide between technological generations, and educational technology. These concepts provide necessary research contexts to understand what is currently known in each of these topics. The third chapter provides a detailed description of the research design and methods used in the study. Following the third chapter are the appendices which provide the instruments which will be used for data collection of the study. The fourth chapter presents the findings drawn from the data, with the fifth and final chapter contextualizing the findings through discussion and recommendations for future research and practice.

CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

My research on adult learners and educational technology at community colleges employs many common terms from the field of higher education scholarship, and there is much variety across the understanding of these terms. In this section I synthesize the available literature on the following topics most relevant to my study: marginality and mattering, adult learners, student success, digital literacy, and technology. Establishing the scholarship of these topics from the literature provided the focus, scope, and foundation for the design of the study.

Marginality and Mattering

The theory of marginality and mattering refers to the way that an environment can affect how students view their place within that particular institutional culture. In 1981, researchers Rosenberg and McCullough published the foundational study of mattering in social sciences. Rosenberg and McCullough (1981) considered mattering to be how individuals perceive their importance to others. Also, Rosenberg and McCullough (1981) used adolescents in their study, but inferred that mattering would extend across age groups. Later, Schlossberg (1989) was the first scholar to apply ideas of mattering and marginality to the college student population, and most specifically adult learners. Schlossberg (1981, 1984) initially argued that mattering as a significant characteristic in the experiences of college students in her work on transition theory, which presents the educational experience as one filled with transitions varying by type, context, and impact.

From this work, Schlossberg collaborated with colleagues LaSalle and Golec (1990) to develop and test the Mattering in Higher Education (MHE) scale and the theory of marginality and mattering (Schlossberg, 1989), both of which examined the educational experiences of adult learners. While marginality and mattering is a cohesive theory, the two ideas of feeling marginal or mattering were presented very differently, where marginality is a state of being and mattering

is operationalized by students as motivation driven by the need to feel valued (Schlossberg, 1989). In college contexts, students want to feel as if they belong at their institution, and the interactions between the student and institution are the factors of whether or not adult learners feel as if they belong or matter.

Marginality

Schlossberg (1989) described marginality as feeling one's position as far from the center of the context, so in an educational setting, feeling as if one does not belong at the institution for varying reasons. Schlossberg (1989) used the concept of centrality to describe marginality, where if one views the educational context as an ecological construct, those for whom the environment is intended are at the center of the model. However, if one does not belong to the primary group or is in some way different from the intended audience, feelings of being pushed to the margins are possible. Feeling marginalized can happen in physical and abstract spaces, such as the campus environment being both made of brick and mortar and of the culture of the institution as well. Marginality can occur in educational contexts as a result of being culturally different from the majority (e.g., race, ethnicity, nationality, sexual orientation, gender identity), experiencing a transition in one's role or place, or because of a personality type (e.g., feeling self-conscious, unconfident, or uninformed) (Schlossberg, 1989). While the feeling of marginalization can be temporary or permanent, Schlossberg (1989) felt that "everyone is marginal from time to time…and feeling marginal leads us to conclude that we do not matter" (p. 8).

Mattering

The feeling of mattering refers to "the belief, whether right or wrong, that we matter to someone else" (Schlossberg, 1989, p. 9). However, despite providing such a clear and distinct definition of mattering, the overall concept is much more complex. Mattering consists of five

dimensions: attention, importance, dependence, ego-extension, and appreciation. The first four dimensions identified by Rosenburg and McCullough (1981), while the fifth arose from the work of Schlossberg (1990). The five dimensions of mattering as described by Schlossberg, Lynch, and Chickering (1989, p. 22) are:

> Attention: "The most elementary form of mattering is the feeling that one commands the interest or notice of another person" (Rosenberg & McCullough, 1981, p. 164, as cited by Schlossberg, Lynch, & Chickering, 1989, p. 22).
>
> Importance: We are the object of a person's concern and believe that a person cares about what we want, think, and do.
>
> Dependence: All of us depend on others, but what is special about mattering is that if focuses on others' dependence on us.
>
> Ego-extension: We feel that others will be proud of our accomplishments and disappointed with our failures.
>
> Appreciation: We feel that others are thankful for what we are and what we do (Schlossberg, Lynch, & Chickering, 1989, p. 22).

These dimensions construct the concept of mattering as one which is founded in and requires interaction with other aspects of the context, specifically other people. However decisions made by the institution can also influence whether individuals feel as if they matter at the institution, as those decisions were made by people (Schlossberg, Lynch, & Chickering, 1989).

Marginality and mattering are significant to understanding the way adult learners feel about their place within the educational environment as there is a strong connection between feeling as if one matters and retention, student involvement, satisfaction, and community (Schlossberg, 1989; Schlossberg, LaSalle, & Golec, 1990; Schlossberg, Lynch, & Chickering,

1989). In order to encourage mattering and enjoy the benefits of a student body that feels valued, institutions must acknowledge and embrace student diversity, so as to understand the commonalities and individualities of those enrolled (Schlossberg, 1989). "Educators need to pay more attention to programs, practices, and policies in relation to the five dimensions of mattering for all students" (Schlossberg, et al., 1989, p. 23) and in reference to the implementation of technology at community colleges, the needs of adult learners should be considered and not assumed.

Studies Using Marginality and Mattering

Since publication of Schlossberg's marginality and mattering theory in 1989, many scholars have used her work to understand students and affirm that mattering is important to all students at risk of marginalization. Initially Schlossberg developed her theory alongside her colleagues LaSalle and Golec (1990) by interviewing 24 men and women. They used the interview findings to develop the MHE scale in order to quantitatively test the concept of mattering on an adult learner sample (Schlossberg, LaSalle, & Golec, 1990). Since then the theory has been tested and retested on students at specific institutions (Kent, 2004; Lucas, 2009; McGuire, 2012), and particular diverse student populations (Lucas, 2009; Tovar, Simon, & Lee, 2009). Also of note is Hillard's (1996) work that validated the MHE scale among non-traditional students at community colleges. Hillard (1996) established mattering and an important component of community college adult learners' educational experiences with a direct relationship on their likelihood to persist from one year to another.

Despite the variety across the student demographics from studies using marginality and mattering, several core commonalities to research using Schlossberg's (1989) theory. First, the marginality and mattering theory has held up as a valid assessment of mattering across diverse

student groups who could be considered marginalized because of various demographics. Also, marginality and mattering remains a meaningful theoretical concept that describes an important characteristic of the student experience: that it is important to feel as if one matters. Hillard's (1996) research demonstrates that the theory is valid for non-traditional students at community colleges, an important distinction that supports my research. However, despite the scholars who have validated the marginality and mattering theory as an important theoretical concept, only one study references any connection to technology. Lucas's (2009) study found that the availability of digital and online services, classes, and programs was important to adult learners because such services provided flexibility. However Lucas's (2009) only data collection method was an online survey, so adult learners who do not have consistent access to the internet, feel comfortable using computers, or are otherwise unwilling to complete an online survey were not present in his analysis. My study included students who are both resistant to and open to the uses of technology in their educational experience so as to fill the gap in the literature and knowledge about their feelings of marginality and mattering.

Adult Learners

The Adult Learner

The body of literature on the subject of adult learners is expansive, and a large amount of intellectual energy has been spent defining adult learners (sometimes grouped with or referred to as non-traditional students). Broadly, any student older than the traditional college age of 18-24 can be referred to as an adult learner. However, the literature overwhelmingly describes adult learners as a population much different from the traditional college aged student. The National Center for Education Statistics (NCES) established the age of 25 as a shift from traditional aged to adult learner (Horn & Carroll, 1996). The NCES also recognizes that age alone as a standard

for adult learner status ignores the diversity of life experiences and characteristics that make the adult learner unique from traditional aged college students (Horn & Carroll, 1996). Because of the ambiguity of setting an age as a standard, the NCES published a study describing seven characteristics of non-traditional students, of which students only need to meet one of the descriptors in order to qualify: delayed enrollment, part time enrollment, full-time employment, financially independent, reliance of dependents, being a single parent, or not possessing a high school diploma (Horn & Carroll, 1996). While these characteristics create a very clear standard for non-traditional students, scholars have since built on and reinforced Horn and Carroll's (1996) work to describe adult learners as a specific set of this larger group of students, one that focuses on the age and responsibilities of the learner (Pusser, et al., 2007). Specifically the aspirations, motivations, life circumstances, and preparation of adult learners delineate them from traditional aged college students, and that these conditions elevate the risk of failing to complete and pass courses, persist, and ultimately be successful (Pusser, et al., 2007).

Adult learners are students older than typical college age of 18-25, and facing life decisions and responsibilities such as children or other dependents, full-time employment, and other factors that keep the student from defining school as a primary responsibility (Pusser, et al., 2007, p. 4). Horn and Carroll (1996) clarify adult learner contexts by ranking students on a scale ranging from minimally non-traditional to highly non-traditional, with the higher number of non-traditional factors resulting in a higher ranking. A higher ranking is correlated with a higher risk of the student not completing a degree (Horn & Carroll, 1996). Adult learners generally meet at least four of Horn and Carroll's (1996) non-traditional factors, typically part-time enrollment, financial independence, dependents, and full-time employment, which places adult learners as moderately to highly nontraditional (Kenner & Weinerman, 2011; Lane, 2004).

Because of these established conditions of adult learners, I used Horn and Carroll's (1996) definition of adult learners as a distinct group of non-traditional students who are over the age of 25 and meet one or more of the characteristics of a non-traditional student. However, I only interviewed participants who were born before the year 1980, a common landmark in the distinction between digital natives and digital immigrants (Prensky, 2001a, 2002b; Thompson, 2013). Based upon the timing on the study, many students who qualify as adult learners (25 years old or older) may identify more closely with digital natives than digital immigrants, so using additional age criteria provides a more appropriate sample. Also, the study focuses on adult learners who are pursuing a postsecondary education, whether it is a degree, certificate, or completion of a certain number of credits, however not students taking seminars and classes in continuing education contexts.

Of significance to my study is the work of Karp & Bork (2014) who studied adult learners at community colleges and their multi-faceted experiences as college students. The article is titled "They never told me what to expect, so I didn't know what to do": Defining and clarifying the role of a community college student," and demonstrates that adult learners often struggle with college readiness beyond being academically prepared (Karp & Bork, 2014). In their study, adult learners have to develop competencies within and manage academic habits, cultural know-how, balancing multiple demands, and help seeking (Karp & Bork, 2014). College readiness is a set of skills and attitudes that can help predict whether or not a student is capable to manage the expectations, requirements, and environment of collegiate life. At community colleges, adult learners must be prepared to develop the four components of the college student role where they are both independent and intradependent with the resources available at the college. By identifying both technological ability and willingness to seek out help as specific

skill sets, Karp and Bork (2014) describe the experience of adult learners in contemporary higher education.

Adult learners as a group have been studied extensively, and there is an established body of literature on them and their experiences. While the research body is expansive, the study of adult learners yielded important distinctions in learning theory, including the concept of andragogy. This term arose from the organizational development field that sought to study adult learners as employees in workplaces, as a supportive workplace learning environment could improve business efficiency and success (Kenner & Weinerman, 2011; Merriam, et al., 2007). From study on adult learners during the 1950s and 1960s, many practitioners in organizational development began to seek out or develop new learning theories as traditional models from higher education were not translating well into workplace training. While adult learners have been an important student population since then, their needs are not always considered in broad scope of traditional higher education (Merriam, et al., 2007).

Andragogy

Andragogy is a theory created to acknowledge the potential distinction of adult learners requiring a more nuanced learning theory from traditional pedagogy (Knowles, 1974). Andragogy was suggested before Knowles's work, as early as 1833 and then again in 1921, but these early conceptualizations were not used meaningfully in education (Smith, 2010). Andragogy establishes adult learners as unique from traditional aged students in regards to teaching and learning. Malcolm Knowles described six assumptions of adult learners based on his research:

1. As people mature self-concept moves from that of a dependent personality toward one of a self-directing human being.

2. An adult accumulates a growing reservoir of experience, which is a rich resource for learning.
3. The readiness of an adult to learn is closely related to the developmental tasks of his or her social role.
4. There is a change in time perspective as people mature-from future application of knowledge to immediacy of application. Thus, an adult is more problem centered than subject centered in learning. (1-4, Knowles, 1980, pp. 44-45)
5. The most potent motivations are internal rather than external.
6. Adults need to know why they need to learn something. (5-6, Knowles & Associates, 1984, p. 12)

Knowles's (1974, 1980, 1984) scholarship on andragogy focused on the life situation of the adult learners as a defining factor in the way that they encounter and experience learning.

In andragogy, changes to instruction need to be made to allow adult to focus more on the process of learning and less on the content, typically using experiential teaching and learning activities, like case studies or other simulations rooted in real world contexts (Merriam, Caffarella, & Baumgartner, 2007). For adult learners, they typically have an identifiable purpose or motivation for learning, and wants immediate usefulness of the learning. (McClusky, Illeris, & Jarvis, 2007). In 1984, Knowles applied his andragogical principles to an example of designing a training for adult to learn personal computing. In this example, learning computers was a context with a clear purpose and immediate application of knowledge, that of actually being able to use the personal computer (Knowles, 1984).

However, andragogy is not without critique. Specifically, the primary concern is that the concept is dated in experiences from the 1960s and thus unreflective of sociohistorical context,

and recommendations from practitioners assert "it does not give us the total picture, nor is it a panacea for fixing adult learning practices…rather it constitutes one piece of the rich mosaic of adult learning" (Merriam, et al., 2007, p. 92). Also, there is concern over the lack of empiricism in Knowles's theory of andragogy, that the claims about adult learners and their needs have not been established in empirical studies (Lambert, et al., 2014). Despite these concerns, andragogy is the only learning theory that treats adult learners as a distinct population from traditional aged college students.

Student Success and Community Colleges

It is difficult to define and measure student success of adult learners in community colleges (Bragg & Durham, 2012). Researchers and educators often ask "what is success?" with responses as wide as the diverse student body of U.S. higher education. One of the most common metrics of student success for undergraduate education is 150% time graduation rates, however two year institutions do not have the luxury of assuming that a significant portion of their enrollment intends or wants to graduate (Renn & Reason, 2013). Some examples of non-associates degree seeking community college students include those pursuing adult and continuing education credits, seeking to complete a smaller number of credits than needed for graduation and then transferring to a four-year institution, working toward a certificate that requires fewer credits than an institutional degree, or wanting to receive some additional training in a particular field. Since many student ambitions do not require completion of an associate's degree or equivalent, degree attainment is an insufficient measurement of success of students at community college. Such limitations have been known for some time, and Bers and Smith (1991) argued for the need of a more complete understanding of student intentions in order to describe successful persistence at the community college level.

There are alternative measures available, and one study argued for a more comprehensive way of measuring student success at community colleges by focusing on three sets of measurements: first-year milestones, second and third-year milestones, and final outcome measures (Achieving the Dream, 2012; Goldberger, 2007; Goldberger & Gerwin, 2008). The Achieving the Dream (2012) study argued that a student's progression through college is itself a marker of success, although intermediate milestones of persistence are still focused toward graduation as a primary outcome of attending a community college. The intermediate milestones include measurements "persisted from fall to spring, passed 80 percent or more of attempted hours, earned twenty-four or more hours" and completion of developmental or "gatekeeper" courses in math or English by the third year (Goldberger, 2007; Goldberger & Gerwin, 2008). By establishing and measuring intermediate milestones, institutions can both demonstrate the importance of measuring student success as a progressive concept and illustrate a promising alternative measure of community college student success.

Another initiative, this time headed by a single community college, sought to create a definition of student success reflective of the diversity of the student body and these students' motivations. The underlying assumptions of their new model of student success were:

- That students enrolled in transfer or career and technical programs intend to complete the appropriate degree or award.
- That students requiring developmental studies must progress to college-level math and English and successfully complete college-level course work to attain a degree
- That retention is the key to success. Retention from the beginning to the end of each class period, retention from the first semester to the second semester, and retention from the first year to the second year. (Baldwin, et al., 2012)

These assumptions and the institution's work defined student success as "achievement of an academic credential for program-placed students or the progression toward the credential within four years, to include students who have transferred prior to degree attainment or are still enrolled at the institution" (Baldwin, et al., 2012, p. 84). While this definition does not encompass all motivations for enrolling at a community college, it does allow for a much more inclusive understanding and approach to defining progress and success within the community college context.

There are many factors that can be considered in the context of student success for community colleges. As discussed above, academic persistence and matriculation are important outcomes, however they do not adequately describe what is happening during the experience. Social and academic integration are important factors, as the community college experience is related with persistence and likelihood to meet the student's individual objectives (Bers & Smith, 1991). Similarly, Syed and Mojock (2008) argued that student engagement is an important variable in the community college experience for determining persistence and likelihood of fulfilling learning outcomes. All of these factors reflect the significance of using Schlossberg's (1989) marginality and mattering framework, in that in order to be successful on more common metrics of matriculation, (i.e., persistence and graduation) students must feel successful in terms of being considered, valued, and important within their campus (Lucas, 2009; Schlossberg, LaSalle, & Golec, 1990). These feelings may be different for adult learners given the context of educational technology and the differences in experiences between digital native and digital immigrants.

The Digital and Generational Divide

Throughout my study, I use the concept of a "divide" is to frame the discussion of the comfort and ability of using technology by age or generation. This divide is a digital and generational one, as the arguments typically focus on differentiating the current population of young users who have grown up with digital technology from the older generation, which has not. I frequently use the language of a digital or generational divide, but with the clarification that such a simple definition of "generation" is reductionist and marginalizing. Discussion of a divide between those who seem to understand and are comfortable using technology and those who do not should include larger questions of access (including socio-economic and cultural factors). As it was possible for an affluent child born in the late 1960s or early 1970s to have grown up around computers and other digital technologies, just as it is a reality for young people today to live in homes and attend schools without reliable computers or internet access, the lines differentiating this divide as purely generational are blurred (Bauerline, 2011; Garza Mitchell, 2011). These exceptions become important throughout the study, primarily to create discussion of pedagogical and institutional assumptions about the access to and ability to use digital technologies. The following literature describes divide, and it is important to acknowledge that this divide can also be cultural, socio-economic, cognitive, and more. For sake of consistency and clarity, the phrase "digital divide" is the primary label for this concept of a possible generational gap in ability and comfort using digital technology.

Digital Literacy

Within Prensky's (2001a, 2002b) typology, he is identifying that there is a likely skills and confidence gap between older and younger computer users. Prensky does not name a computer skills gap as literacy in his initial discussion of digital immigrants and natives, but by

considering the age of users and their comfort, confidence, and ability with technology, he is connecting to the scholarship of digital literacy overall. For my study, I used the following definition for digital literacy as knowledge, confidence, and capability to understand, use, and navigate information and communication technologies, typically presented via computers and screens (Jones-Kavalier & Flannigan, 2006; Martin, 2008; Mills, 2010).

Digital literacy encompasses a broad scope of meanings, seeing applied definitions in psychology (Gilster, 1997), sociology (Tapscott, 1998), and technical dimensions of computer usage (Swan, Bangert-Drowns, Moore-Cox, & Dugan, 2002). Eshet-Alkalai (2004) wrote about creating a new conceptual framework to "improve the understanding of the skills encompassed by the term' digital literacy'" and to provide "more precise guidelines for effective planning of learner-oriented digital work environments" (p. 94). Eshet-Alkalai's (2004) framework presented five distinct literacy areas in reference to digital skills and knowledge: photovisual, reproduction, information, branching, and socio-emotional literacy.

Significantly, Eshet-Alkalai's (2004) study intentionally researched three distinct groups of students by age, 10 high-school students, 10 university students, and 10 adults over the age of 30, as he desired to describe any literacy difference across generations and environments. He found that "digital literacy can be defined as survival skill in the digital era" (Eshet-Alkalai, 2004, p. 102). Also, Eshet-Alkalai (2004) described individuals with strong digital literacy as being able to employ different types of digital literacy, such as using branching literacy to see non-linear answers to straightforward inquiry, or the use of information literacy to filter through information found online with cautious skepticism. Of special interest to my study is the dimension of socio-emotional literacy, the most complex of his framework, which determines whether or not a user is capable of managing the community aspect of digital interactions. Socio-

emotional literacy is what allows a capable user to handle negative interactions, and "to share data and knowledge with others, capable of information evaluation and abstract thinking, and able to collaboratively construct knowledge" (Eshet-Alkalai, 2004, p. 102).

The concept of digital literacy is always evolving, shaping itself to include new technologies and interpretations of what it means to understand digital gadgets and media. James Paul Gee (2012) has written extensively about the way that games and gaming influence digital literacy and learning in general. In Gee's (2012) scholarship, games provide the opportunity to develop problem solving skills, think like a digital designer, and include collaborative or competitive interactions. In educational contexts where learners are focused first on learning how to access information and resources through technology, the digital dimension requires a base level of skills built on prerequisites, not gaming (Goode, 2010b). Koltay presents comprehensive competencies across digital literacies has a necessary part of the curriculum for all levels of education, as more and more content is moderated behind technological interactions.

Digital Natives and Immigrants

In the literature, there is a rich discussion of digital natives and immigrants, and the possible generational and divide. Tapscott (1998) began the discussion of a digital technology-driven generation, where the younger generation came of age after the proliferation of the home computer and then increased access to the internet. The year 1980 is a common birth year acknowledgement as the beginning of the digital native generation and increased access to computers (Thompson, 2013). There are many assumptions about the availability of and ability to use digital technologies for all generations, especially those who grew up before home computers were popular.

Other scholars continue the conversation and often debate about the existence and impact of digital natives on society and culture. Bennett, Maton, and Kervin (2008) offer a rich literature review and quasi-meta-analysis on the evidence surrounding this issue. These scholars illustrated that even though the digital native generation has a very complicated relationship with technology, educators should not assume that this generation is equally skilled in the uses and navigation of technology. Since Prensky's initial publication on the subject in 2001, the field has arrived at a consensus that "although digital natives are defined by age, not all youths are digital natives. More than just their age, digital natives share similar attributes and experiences related to how they interact with technology, information, one another, other people, and institutions" (Teo, 2013, p. 51).

An assumption within the digital native discussion is they are "different to all generations that have gone before because they think, behave, and learn differently as a result of continuous, pervasive exposure to modern technology" (Bennett & Maton, 2010, p. 322). While the purpose of this chapter and the proposed study is not to research the existence or breadth of the digital native generation, it is important to summarize this debate in order to stress the potential impact of falsely assuming the size and skill of the digital native population. Research shows that there is a group of young people who have grown up learning, living, and existing digitally, constantly connected (Prensky, 2001a, 2001b; Rosen, 2010; Tapscott, 1998, 2009; Teo, 2013; Thompson, 2013), demonstrating that the digital native/digital typology exists. Many educational institutions and individuals have rushed toward implementing strategies or technologies aimed at meeting the digital-centric nature of the digital native generation (Bennett, & Maton, 2010; Bennett, et al., 2008; Tapscott, 2009). As Prensky's (2001a) typology is not empirical and serves primarily as a classification tool for understanding groups and their relationship with technology, making

decisions based on assuming all computer users under the age of 35 are digital natives is troubling. Assuming that the needs of adult learners will also be served by the same policies and implementations designed for digital natives can result in further marginalization of adult learners.

Recently some research and thought has considered that adult learners may have a different experience with digital educational environments, but until a few years ago, most of the literature was concerned only about traditional-age college students or had no controls or specific research questions around age (Garza Mitchell, 2011). Brown and Czerniewicz (2010) coined the phrase "digital stranger" to describe a group of students (regardless of age) who "lack both experience and opportunities" in which to become a digital native, and "are outsiders to the digital world as is commonly conceptualized" and thus do not fit as a digital immigrant (p. 363). The category of "digital stranger" calls into question whether Prensky (2001) considered the individuals who did not have the chance or motivation to use digital technologies, which could be an accurate description of many adult learners.

Adult Learners as Digital Immigrants

Although the amount of research at the intersection of older students and technology is very limited, the sum of the literature argues for a very distinct educational experience when facilitated through or heavily influenced by digital technologies. Bennett, Maton, and Kervin (2008) asserted that all students must be considered when evaluating a potential educational technology regardless of age or generation, and their assertion describes the importance of including adult learners into the digital conversation. Such consideration of generational demographics of the student body is in conflict with the perspective that educational environments should be adapted in order to fit the differences of the younger and more

technologically-driven digital natives (Brown & Czerniewicz, 2010). Instead, educators should "reject deterministic and exclusionary labels and actively change this discourse" in order to consider the needs of all students (Brown & Czerniewicz, 2010, p. 366).

Pachman and Ke (2012) examined the needs of older students in digital educational environments, and found adult learners (when compared to a population consistent with digital native characteristics) made more errors in their work, needed additional instruction and support, and in general entered the educational environment with less technological proficiency than the younger study group. These findings are similar to Chu and Tsai's (2009) study that found that adult learners had lower scores in self-directed learning readiness and internet self-efficacy within online course environments than the younger students. However, Afip (2014) examined the use of blended learning models with adult learners and found that technology framed and mediated with some traditional learning experiences could potentially support technology competency and learner independence. Also, Tsai, Shillair, and Cotten (2015) found a strong correlation between tablet computers and adult learner digital literacy acquirement. However, it was not apparent that skills from tablet computers translate to traditional desktop and laptop computers or that tablet computers are useful for academic usage (Tsai, Shillair, & Cotten, 2015).

Other studies also reinforce these findings that adult learners are much different from traditional college-aged students and must be considered as distinct learner populations in reference to technology (Chu, 2010; Ke, 2013; Ke & Kwak, 2013; Rivera-Nivar & Pomales-Garcia, 2010). Older students require different approaches and accommodations from younger populations, especially in online learning design considerations, such as "no scrolling but clicking to go to further pages, severely high contrast, center oriented layout, and black sans serif

size letters 18 or larger" (Rivera-Nivar & Pomales-Garcia, 2010, p. 958). River-Nivar & Pomales-Garcia (2010) found that older learners were significantly more satisfied with their experience than the younger group when the lesson content is presented narratively. Chu (2010) found that family support has a positive correlation on adult learner self-efficacy and impact of digital learning, especially when family support comes from sources younger than the learner. These scholars described learning in digital environments as not impossible for adult learners, but requires a separate set of considerations for their needs and learning styles.

Adult learners also differ from digital natives in their social media use, and especially in terms of their behavior on social media platforms. Adults over 30 "confront each change in technology as something new to be mastered" as opposed to digital natives who view new technology through their social experiences (Correa, Willard, & Gil de Zúñiga, 2010, p. 252). From that same study (Correa, et al., 2010), the adults who interacted most on social media were those who also ranked highly in extraversion and openness to new experiences, establishing a trend that the digital immigrant sees social media as a topic of mastery as opposed to community or engagement, and those who would typically be interested in new ideas and social interaction are the most likely to participate. An important factor for adult learners is the utility of interaction through digital technologies, where social media serves as a valuable tool in developing and maintaining a personal learning environment and fosters the learning traits of adult learners including exploration, discovery, and creation (Lavin, Beaufait, & Tomei, 2008). These scholars present the potential educational and personal gains from the use of social media among adult learners.

The Pew Internet & American Life Project's finding that over half of all American adults use social media sites, and the potential for educational and personal gains can be very useful if

realized (Perrin, 2015). The percentage of internet connected U.S. adults using social media does drop with age, with 77% of the 30-49 year old population on social media, while 51% of the 50-64 year old group, and only 35% of the 65+ demographic are connected with social media (Perrin, 2015). Perrin (2015) also found that increased social media use among adults is outpacing younger cohorts, which have been relatively stable, and that the internet connected populations over the age of 30 generally have positive comments about social media, confirming Madden and Zickhur's 2011 results. However, Bennett and Maton (2010) encourage skepticism and caution when assuming that technology use is comparable across generations, because access to digital technology is not necessarily "genuine access" (p. 323). Just because a certain population has access to a computer, smartphone, or social media sites for example, it does not mean that this access is equitable, because "access is a far more complex issue that mere provision of facilities" (Furlong, Furlong, Facer, & Sutherland, 2000, p. 94).

Additionally, concerns have been raised about obstacles to effectively using social media in teaching practice, with acknowledgment that socio-demographic factors complicate any potential benefits from using social media as educational technology (Manca & Ranieri, 2016). While Manca and Ranieri (2016) collected data from faculty and not student adult learners, they found that the age of faculty members influenced their comprehension, usage, and motivations of using social media as educational technology, and that the relationship between educational technology and age needs to be explored further in additional contexts. In their study, they surveyed faculty members about 16 barriers to using social media in teaching, and none of the items reflected concern over student literacy with digital technologies. However, Manca and Ranieri (2016) included presentation of open comments from their study which indicated that the concern of "digital competence" (p. 226) was a qualitative trend from faculty comments who

were uncertain if social media is useful for teaching. However it was not clear if the lack of digital competence was in reference to instructor implementation or student ability.

Online learning, specifically academic courses which are either synchronous or asynchronous but wholly online and not a hybrid format, are a frequent application of educational technology in higher education (Jones, 2015). Within the online course format, Kauffman (2015) found that working adults are more likely to choose online courses than traditional college aged students and that age is a relevant learner characteristic in describing a profile of the successful online student. While Kauffman did not tie her findings to digital literacy as an overt part of her successful student profile, she did identify that learners with greater emotional intelligence and self-efficacy typically found more success in online courses. Kauffman (2015) shared "students who are able to control their emotions and get proper assistance prior to becoming frustrated will have better control over their learning" (p. 7). Connecting Kauffman's work to how adult learners experience and interpret educational technology might contextualize feelings of marginality and mattering for older students.

Oh and Reeves (2015) acknowledge the increased number of adult learners participating in online learning, and argue for a new approach to conceptualizing and designing interactive group work for older students participating in distance learning. Their study found that adult learners are typically more receptive to online collaborative group work as such assignments "enable learners to not only discuss concepts and processes but also enact these ideas to produce real life outcomes" (Oh & Reeves, 2015, p. 48). By acknowledging that adult learners diverge from traditional college aged online students, Oh and Reeves identified the need to develop assignments and lessons which are more reflective and authentic of the lives of adult learners,

where the course community and content becomes the focus despite the technological interactions required for participation.

However, the typology of digital immigrants and natives needs to be contextualized further, as is argued by White and Le Cornu (2011) in their reframing of Prensky's (2001a; 2001b) simplified typology. While Prensky's work provides a useful initial foundation for examining the differences between users based on their usage and approach to computers, a computer user's comfort and attitude toward technology is also influenced by how they view the purpose of technology in their life, either as a functional tool in a specific place and used in familiar and repetitive ways as a visitor, or as a networked community of ideas and people with whom to create, share, and engage with (White & Le Cornu, 2011). The visitor and resident continuum does reaffirm Prensky's observation that there is something which delineates users based on what they do with technology, but that this difference may not be just about generation or age.

These studies reinforce the assertion that there is a digital gap between digital natives and digital immigrants. I argue that adult learners may be within the digital immigrant category and that the literature shows that the adult learner population has a unique and distinct set of experiences with educational technology when compared to the digital native population. Brown and Czerniewicz (2010) argued that technological ability should be considered more a product of experience than age, and that experience with technology is a better predictor of comfort and ability with digital technologies. The consideration that adult learners have had more opportunity to engage in digital technology as mature individuals creates allowances to treat adult learners as a population who could benefit from the right kind of technological experience. While the literature focuses primarily on formal online learning environments and social media

participation, such contexts do not represent the entirety of possible technological interactions an adult learner could experience. However these contexts are sufficient to describe the gap between what is assumed about digital natives (high comfort and ability with technology) and the reality of experiences with technology by adult learners based on available research.

Educational Technology

The amount and type of technology that can be considered educational technology is expansive and varies based upon specific definitions. For the intentions of this study, educational technology references all digital technology implemented by an educational institution that becomes part of the general student experience of that institution. These technologies range from communication (e.g., email, social media, emergency automated telephone calls/text messages), infrastructure (e.g., student information systems), student services (e.g., computer labs, touch screen service portals, virtual offices/departments), and classroom environments (e.g., course management systems, social media platforms, digital readings).

Contexts of Educational Technology

Educational technology as a concept is dependent upon the historical period and context in which advancements are made (Saettler, 2004). In contemporary contexts, educational technology is categorized into instructional and learning technologies, with the former focused on pedagogical decisions made by teachers and institutions and the latter concerned with the technologies employed by the student during the learning (Allen & Seaman, 2015; Saettler, 2004). However, the higher education experience includes a great deal of interaction that goes beyond an instructional and learning binary. For instance, applying for admission and registering for classes require access to an internet-connected computer. In 2008, the Association for Educational Communications and Technology (AECT) defined educational technology as “the

study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (Richey, Silber, & Ely, p. 24). Not only does this definition increase the breadth of what is considered educational technology, it changes the nature of the term by shifting it from a category of technologies to a field of study.

The term "educational technology" is ubiquitous when examining the landscape of U.S. community colleges. Community colleges implement technology for many reasons, including the desire to keep up with the trends of the field, remain appealing to students, improve institutional efficiency, provide more or better service, and to support learning (Bajt, 2011; Treat, 2001a, 2011b). Responding to the impact of technology is one of the most pressing issues facing community colleges (Ramage, 2011). Ramage (2011) articulated the need to respond to technological trends when he wrote "we need not be futurists to conclude that the whole endeavor of higher education has been forever changed by these forces [of accelerating change], perhaps none more significant than technology" (p. 112). Given that new technologies are impossible to predict, and thus anticipate and prepare for, community colleges will always be responding to the technology market as "community colleges on public funding cannot afford to start expensive programs on anticipated changes in technology" (Romano & Dellow, 2009, p. 16). Technological implementations become a matter of necessity for community colleges, typically in the interests of serving the institutional mission, and often by the desire to either reduce cost or increase revenue, or increase access or all three (Foster, 2004). Community colleges often turn to these advancements in order to continue to serve students, a mission which has not changed in principle but in practice.

Based on the available literature, community colleges cannot ignore technological advancements and still maintain the mission of credentialing a workforce (Bajt, 2011; Foster,

2004; Garza Mitchell, 2011; Nicolaides & Marsick, 2016; Romano & Dellow, 2009; Treat, 2011a, 2011b; Watson, 2004; Wheelan, 2016). Conceicao (2016) addressed through illustrating that 21st century technology skills center around digital and media literacies and competencies, typically the ability to use, find, create, and access information through technology. Conceicao (2016) also found that collaboration via technology is a necessary skill for adult learners to learn in order to be competitive in the modern workforce, setting apart higher education as a context for significant learning potential. However, such a context is best designed for adult learners through a paradigmatic shift from teaching-centered to learning-centered, asserting technology as a necessary skill set that needs to be part of the academic curriculum (Conceicao, 2016).

Implementations of Educational Technology

Much of the available literature examines educational technologies that focus on e-learning, which is the implementation of a strategy that provides online learning opportunities for students and community members (Bajt, 2011; Olliver, 2004; Scarafiotti, 2004). Employing e-learning expands access to higher education and ideally allows for an institution to efficiently serve more students while increasing tuition revenue (Foster, 2004; Olliver, 2004; Scarafiotti, 2004; Treat, 2011a, 2011b). An often cited article provides an important link between the e-learning infrastructure and student considerations, and the authors (Milligan & Buckenmeyer, 2008) encouraged assessing whether or not students are ready to participate in e-learning. Milligan and Buckenmeyer's (2008) described the importance of measuring the access and skill levels of students as part of an e-learning strategy. Among their recommendations, they illustrated the need to respond to assessment findings and provide appropriate support for learners who may have additional technological hurdles on the way to online courses. Providing technological and pedagogical support is very important, and Milligan and Buckenmeyer (2008)

suggested utilizing existing departments and creating new resources to provide tutoring and services for students participating in online learning.

In the larger scope of available research, Milligan and Buckenmeyer (2008) argued for caution and intentionality when implementing an e-learning strategy, but they did not distinguish adult learners as a specific population of concern. There is no available research that takes Milligan and Buckenmeyer's (2008) findings further and argues for such careful consideration with the full breadth of technology with which learners will interact with during their experiences. However, Castillo (2013) suggests that community colleges are missing the mark in reference to "the difference in how online instruction is utilized to deliver instruction to the diverse community college student population" (p. 42). From proprietary or open source software, which supplier to license information systems influences how students experience the institutional technology. Castillo (2013) also presents that while adult learners may likely benefit from the flexibilities provided in online environments, an adult learner's decision to enroll in online courses needs to be filtered through academic advisement as an important resource in determining if that student would be a successful online student.

Other scholars argue for more specific uses of technology that goes beyond the boundaries of the classroom (whether virtual or digital). Bajt (2011) found that social media presents a wide range of opportunities for community colleges and the students enrolled, including open-education, communication, engagement, and creating constructivist communities. Bajt (2011) also suggests that "millennials" (another label for the generation which includes digital natives) do not necessarily come to community colleges with a preference toward a high level of implementation of digital technologies in their educational experience. Grosseck (2009) agreed with the potential of social media in higher education, but also argued that the potential

benefits are inconsequential if the strategies and technologies are not implemented thoughtfully and carefully. She described how the use of social media may be the best attempt to teach digital literacy, paying attention to the reality that not all students are going to be prepared to use digital technologies to their full potential without development and guidance (Grosseck, 2009).

Herndon (2011) provided recommendations for the implementation of self-service technologies at community colleges. Self-service technologies (SSTs) are mechanisms that allow institutions and offices to provide services without direct contact with human providers (e.g., including financial services, library catalogs, parking services, career planning, and other academic services). Overall, SSTs provided the opportunity for efficiency and cost-effectiveness. However, Herndon (2011) does not discuss any drawbacks from eliminating direct human contact from the community college experience, or whether student populations want or need increased technology-mediated services.

The state of the literature indicates that there are still large gaps that connect what is being implemented by community colleges and how students experience such technologies. Also, most of the literature that studies the amount of access to technology has taken place at universities and not community colleges (Bennett & Maton, 2010). Research findings on university students should not be used as a proxy for community college students. Understanding the community college student experience and the potential relationship between what they experience and the likelihood of their persistence is a pressing issue to which the proposed study would contribute.

Conclusion

My research connects to the intersection of several key topics: adult learners, student success at community colleges, the digital divide, and educational technology. Each of these

areas feature a rich field of literature, and this chapter provides an overview of the relevant research as it pertains to the proposed study. Overall, there is a strong level of concern for students at community colleges, including adult learners, and for the technological trends that students encounter. Some scholars argue that digital literacy is a requirement for academic and career success (Goode, 2010a; Grosseck, 2009; Pachman & Ke, 2012), but that position does not take into consideration the ability of adult learners to fit within learning environments designed for digital natives. No matter what the potential benefits are, assuming that all students have the necessary access and skills to participate in the increasingly virtual community college risks further marginalization of those who are not heavily skilled or connected with technology (Brown & Czerniewicz, 2010; Dinevski & Radovan, 2013; Goode, 2010a). Selwyn (2010) warns against such assumptions which forget the critical context surrounding technology, and in doing so ignore the important issues of democracy and social justice in educational settings as:

> Many accounts of educational technology tend, for example, to privilege the immediate context of the individual learner and technological artifact at the expense of all others, or at best, consider the use of digital technologies with one particular group of learners or in one particular context. (p. 70)

Also, as the amount of virtual services increases, the amount of time spent physically on campus decreases (Floyd & Casey-Powell, 2004), which changes the nature of the student experience for everyone, including adult learners. My research weaves together the available literature to describe a network of ideas that will guide the conception and design of the study so as to serve as a meaningful contribution to the body of knowledge of each of these subjects.

CHAPTER 3: METHODOLOGY AND METHODS

My study examined how adult learners' interactions with technology influence their feelings of marginality and mattering (Schlossberg, 1989). Of specific interest to the study were the ways institutional technological culture and interaction between adult learners and technology influences feelings of marginality and mattering. The primary research question is "how does technology influence how adult learners feel valued, welcome, and important on their community college campus?" Also, I explored sub-questions of the research topic which more deeply examine the interaction between technology and adult learners throughout the broader student experience (such as extracurricular, co-curricular, day-to-day uses, and overall student service experiences) as opposed to focusing only on course contexts: do adult learners who report higher or lower feelings of confidence and competency with technology describe higher or lower feelings of satisfaction and feeling valued/important to their institution; and how does the way a campus establishes/communicates its technological expectations/services/systems create a culture of assumed technological literacy?

I conducted a constructivist study also utilizing connectivism and Schlossberg's (1989) theory of marginality and mattering. I interviewed 12 adult learners at 2 community colleges for a total of 24 participants. From each community college I also selected 2 individuals who reported struggling to navigate the technology, and 2 who felt competent using the institution's educational technology for 8 observational interviews (a total of 32 interviews with adult learners at two community colleges). I sat down with these participants at a computer and asked them to guide me through the systems they must use in their education. This method allowed me to view the individual systems from the participant's perspective instead of my own, so as to better understand the effect of technology interactions on adult learners' educational experiences.

Additionally, I spoke with faculty and staff at each institution to learn more about the ways that technology is considered, implemented, and assessed as it relates to the adult learner experience. I also included physical and virtual explorations of each campus site in the study to understand and experience the technological culture of the institutions so as to provide context for the analysis of the interviews. I created the proposed study protocols (Appendices A, B, C, D and E) from existing literature, the study research questions, the few survey instruments that examine technology usage framed by age or generation (Teo, 2013; Thompson, 2013), and Schlossberg's (1989) marginality and mattering framework.

Research Paradigms

The study viewed the community college adult learner population as a valuable demographic and asset in US higher education. I used a constructivist perspective to drive the overall conception and design of the study. Additionally, the study context examined interaction between adults and technology, so I used the concept of connectivism to understand students as lifelong learners who encounter knowledge external to themselves, such as through digital technologies. Constructivism allowed for several important distinctions that are important to the study, including placing significance on the participant's experiences and understandings (Jonassen, 1994).

I furthered constructivism by also employing the concept of connectivism. Connectivism is typically applied as a learning theory in digital contexts, however it builds on ideas of constructivism to explain how learning has changed because of digital technology (Siemens, 2004). While some scholars argue that connectivism is in opposition to constructivism (Ben-Yosef & Pinhasi-Vittorio, 2012; Siemens, 2004), the paradigms share several similarities that make connectivism useful in my study. Particularly, I studied the intersection between digital

technology and the adult learner experience, examining this relationship through a framework specifically aimed at making sense of learning in the digital age provides additional tools for consideration and analysis.

Constructivism

Constructivism is an epistemological theory in education that argues that knowledge is constructed by learners through experiences and real life contexts (Creswell & Plano Clark, 2011; Jonassen, 1994). Knowledge occurs within the learner through an active process, and the constructed knowledge is independent the learner, unless that knowledge is part of the learning context (Bodner, 1986). Jonassen (1994) described how constructivism in education must be founded in real world contexts in order to construct knowledge from experience rather than reproduce knowledge. Constructivist perspectives are often applied in qualitative research designs (Creswell & Plano Clark, 2011), however, the selection of this perspective is foundational in presenting the experience of the adult learner as unique and significant. As the qualitative methods used in the study gathered voices and stories from adult learners (such as their motivations, desires, perspectives on what has influenced their educational experience), there were multiple realities presented that required my interpretation in order to making meaning across the data.

Connectivism

A relatively new and alternative learning theory is connectivism, which is the idea that "learning is a process that occurs within nebulous environments of shifting core elements" (Siemens, 2004, Connectivism para. 1). Connectivism is a response to the increased complexity of knowledge resulting from the proliferation of the internet and the breadth of networked knowledge throughout the web (Siemens, 2004). An important feature of connectivism as a

learning theory is that learning is a lifelong process, and one that evolves based on the environment of the time (Siemens, 2004). Lifelong learning is important to the continued enrollment of adult learners in higher education, as well as its very specific argument that learning is much different in the digital age. A connectivist critique of constructivism challenges the assumption that all learning occurs within the learner as not fully explaining or incorporating the learning and knowledge available through the digital network of computers and the internet (Siemens, 2004). Whether connectivism is a guiding perspective of community colleges that utilize technology or not, it can be argued that the networks of information and expectations move the learning environments into new arenas that affect the student.

Connectivism suggests that all knowledge is networked through the internet, and connecting to the network itself is to taking part in a knowledge and community process which is beyond the user's direct control (Siemens, 2004). Depending on the technological skill and comfort level of adult learners, this statement could also apply directly the student experiences when attending a community college. An additional principle connectivism is that the diversity of opinions, ideas, experiences and people is where learning and knowledge rests, which supports the approach of this study to value the individuals and their experiences.

Sampling and Design

As the study focuses on adult learners as a distinct student population, I used purposive sampling in selecting my research sites and soliciting participants. I used criterion based purposive sampling in my selections so as to ensure that the sites and participants are appropriate to answer the study research questions (Patton, 2001).

Site Selection

I chose two public community colleges from the Midwestern region of the United States whose student populations are comprised of nearly 40% adult learners. The 40% threshold matches the overall proportion of adult learners at community colleges nationally (NCES, 2012). Also, the institutions offered general education and career oriented academic programs, as colleges attractive to those seeking technical, vocational, or general education. Geographically, Greendale was located in an urban area, and Harris was in a more rural setting on the far edges of a large urban area. Significantly, Greendale was much more overt and direct about their implementation and opportunities of technology, and Harris focused on the educational experience more traditionally but supplemented by technology.

Greendale Community College is a two year public post-secondary academic institution, serving students in an urban environment, nested within a mid-sized city in the Midwestern region of the United States. An early adopter of various educational technologies such as virtual campus services, course management systems, and touch screen kiosks (for parking, advertising, general information), GCC has committed to incorporating technology into its operations and curriculum in order to bolster innovation and competitiveness of graduates in the modern workforce. Across the entire institution and its multiple campuses in the city, Greendale offers more than 300 associate degrees and certificates. Students at Greendale typically follow one of three tracks: general education credits for transferring to a four-year institution, career and vocational programs, and developmental training and education for students of all preparedness levels. However, Greendale espoused a model of providing career and vocational training as a primary focus of the institution's operation.

At the time of data collection, Greendale Community College reported approximately half of its active student enrollment as adult learners, with more than 35% of the total enrollment reported as at least 30 years old. The student body was approximately 69% white, 11% African American or Black, 4% Asian American or Asian, 2% identifying as Hispanic, and 3.4% considered as mixed-race. The remaining 11% of students reported as other or were unreported. While overall active enrollment is shrinking, GCC has continued to enroll more than 25,000 credit seeking students every year across academic programs and course offerings.

Harris Community College is a public two-year institution in a suburban community, geographically within commutable distance (considered within one hour by personal vehicle, and 1.5 hours by public transit) of several other higher education institutions. Harris Community College aggressively markets the offering of classes seven days a week for students who need or want flexibility in their scheduling. This flexibility includes, but does not focus on, distance education and online classes. Harris stresses a less vocationally focused curriculum than Greendale, offering a larger proportion of general education and humanities courses, as well as popular courses in business. Harris offers approximately 100 associate degrees and certificate programs in the fields of technology, math and natural sciences, business, social sciences, humanities, business, and health-related fields.

The enrollment demographics at HCC are similar to Greendale, with approximately 42% of the credit-seeking students classified as adult learners. Approximately 26% of all students at HCC were at least 35 years old. Approximately 64% of the total student population were White, with another 16% identified as African American or Black, 6% Hispanic, 3% Asian or Asian American, with 4% identifying with more than one race. The remaining 7% of students reported as other or were unreported or unknown. Harris Community College enrolled more than 18,000

students in 2014 and is projecting continued growth in enrollment of credit-seeking students during the next few years, mostly due being one of the most affordable institutions in the region. Harris also experienced a higher transfer rate than Greendale, and has more students who transfer to four-year institutions than who graduate from their programs, due primarily to their proximity to several other postsecondary institutions in the area.

Participant Selection

While at each institution, I solicited participants primarily by speaking with instructors with high proportions of adult learners in their courses. Faculty and staff contacts at each institution assisted with identifying these instructors. To supplement my participant pool, I also received permission to leave information about my study and solicitation surveys at offices where adult learners might seek support, such as academic advising centers, computer labs, writing centers, and other support offices. I gave interested participants paper copies and a link to a digital version of the survey, information about the study, and an informed consent letter. I provided interested participants with a stamped envelope addressed to me personally. In many cases, instructors and offices volunteered to collect surveys on my behalf for me to pick up at a later time. Overall, 19 adult learners submitted surveys at Harris, and another 27 submitted surveys at Greendale. I used maximum variation sampling in order to provide a diverse participant group (Merriam, 2009). I purposely selected participants from this pool with the intention of maximizing diversity of participants across gender, academic field of study, and race and ethnicity, and age (with a minimum age of 35).

Every participant was at least 35 years old and had attended classes in the semester prior to the one in which data is being collected. The age requirement insured that the participants were born before the year 1980 and thus likely be members of the digital immigrant group from

Prensky's (2001a, 2001b) typology. Participants also needed to have had at least six completed face-to-face classes at the institution in order to have become aware of the technology expectations for the academic experience. Variation with experience with educational technology was also preferred, so including both students who have and have not had online or hybrid classes was included in the sampling criteria.

I also spoke with four administrative staff members at both institutions. All eight administrators interviewed were involved with technology implementation on their campus. From these initial interviews and the reported technological confidence from the selection survey, I selected four participants from each site for an additional interview focusing on their computer ability, with two participants reporting very low confidence and ability, and two who felt they were relatively adept at using computers. In the second interview, I asked these eight participants to demonstrate the software and websites they used as students at Harris or Greendale. I also asked participants during the observational interviews to demonstrate various tasks common of college students, such as using a word processor, email, social media, and search engines.

Participant Overview

I selected a total of 24 participants, 12 from Greendale Community College and 12 from Harris Community College. I purposefully selected the twelve participants interviewed from each institution from a larger set of student volunteers. All study participants identified themselves as having had difficulty with technology both in their everyday and academic lives. Participants represented a range of ages, racial and ethnic identities, academic areas of study, and gender identities. All participants had been last enrolled in postsecondary education more than 15 years ago, with the exception of Jerome who completed a vocational program to become a prison

guard approximately 11 years before returning to Harris Community College. An overview of participant demographics is in Table 1.

Table 1. Research Participant Summary

Greendale					
Name	Gender	Age	Racial/Ethnic Identity	Years since previous post-secondary enrollment	Area of study
Aaron*	Man	36	White	10+	Dental Hygiene
Charles	Man	44	White	24	Paramedic
David*	Man	65	White	40+	Political Science
Earl	Man	53	White	31	Management
Emma	Woman	39	Black	20+	Art, Design, and Multimedia
Eunice*	Woman	62	Multi (Hispanic/White)	40+	Writing
Jenny	Woman	35	Hispanic	Never	Education
Lashawnda	Woman	39	Black	15+	Nursing
Maria	Woman	51	White	30+	Hospitality
Maureen*	Woman	49	White	30	Nursing
Mohammed	Male	48	International Multi (Black/Middle Eastern)	Never	Automotive
Peggy Sue	Woman	43	White	21	Accounting
Harris					
Name	Gender	Age	Racial/Ethnic Identity	Years since previous enrollment	Area of study
Arnie*	Man	52	White	30+	Information Technology
Bill	Man	58	White	40	Automotive Tech
Bridget	Woman	40	White	21	Automotive Tech
Dolores	Woman	71	White	Never	Music and Performing Arts
Jerome	Man	39	Black	18 (11 since guard training)	Criminal Justice
Jimmy*	Man	42	White	19	Nursing
Megan	Woman	44	Black	23	Digital Media Arts
Robin*	Woman	47	Multi (White/Black)	25+	Hospitality
Rose	Woman	57	White	35+	Business
Sheryl	Woman	55	Hispanic	30+	Business
Yolanda	Woman	44	Hispanic	24	Information Technology
Yun*	Woman	62	Asian American	Never	Criminal Justice

Observational interview participants identified with an "*" next to their names

Campus Administrators Overview

I interviewed campus administrators at Greendale and Harris to understand the way that each school made decisions about, implemented, assessed, and valued technology. Campus administrators were at least mid-level professionals involved with technology decision making processes. Each administrator worked directly with technology in some way, whether the infrastructure (physical or software systems), academic integration or execution, or by directly supervising other professionals who were tasked with implementing and managing technology. All administrators served on technology-related committees for their respective schools. A brief description of their positions is available in Table 2. In order to preserve confidentiality, position titles were not used, and instead general descriptions are provided.

Table 2. Campus Administrator Summary

Greendale	
Name	Position Description
Edward	Senior level IT professional
Emil	Network administrator role and supervisor
Rick	Mid-level IT professional
Sheila	Mid-level academic administrator
Harris	
Name	Position Description
Ahmad	Senior level IT professional
Christine	Mid-level IT professional
Reggie	Senior level academic post
Gregory	IT professional and faculty technology trainer

Data Collection

I conducted single semi-structured interviews with the participants. I used interview protocols, Appendix A and B to collect data from adult learners as the focus of the study. I tested the protocol twice with two adult learners from a third community college site that was not one

of the research sites. Additionally, I collected observations to assess the technological culture at each research site, both of the physical and virtual aspects of the campus. Interviews with institutional faculty, staff, and administrators were part of the examination of the technology culture at the institution, and provided insight into the decision making processes for each site.

Interview Data

I interviewed adult learner participants in person using the student protocol (Appendix A). Two major factors influenced my data collection methods. First, adult learners often have additional responsibilities that keep their schedules busy, such as families and employment (Pusser, et al., 2007). Some participants had available time to interview during my primary site visit, so an in person interview was arranged for a later date in time. I avoided using popular video chat software to conduct interviews, as platforms such as Skype and Google Hangouts. As my study centered on an adult learner's experience with technology, I could not assume that a participant would be willing and able to be interviewed in this manner.

I conducted all interview in person, in quiet spaces or semi-private places behind closed doors in order to maintain confidentiality. Most interviews were conducted on campus, but local libraries were also used. I selected locations for interviews based on available space and preferences of the participant, and included study rooms on campus, offices volunteered by faculty, and sometimes secluded places of building lobbies. Interview spaces at libraries were smaller study rooms or workshop/classroom spaces provided by librarians.

For the observational interviews, where I asked participants to demonstrate how they use computers as students, I had each participant to use my personal laptop with a wireless optical mouse. During the observational interviews, participants were asked to complete tasks from Appendix B, such as use a course management system, access student records, check and

respond to email. I also asked if they used social media, and if so to demonstrate how they used whatever sites they used regularly. I also asked participants to show how they look for research or resources for assignments, or how they would sign up for a parking permit or pay a parking ticket.

I interviewed institutional administrators using the employee protocol (Appendix C) in person during visits to campus. I was able to schedule these interviews prior to my visits. I digitally recorded the audio during the interviews and had the conversations transcribed within two weeks of completing each site visit. I invited all participants to check the transcript for accuracy and to select their own pseudonym to protect their confidentiality.

Observational Data

In reference to the observational data as I assessed the culture of technology at each site, I used an adaptation of the model presented by Goetz and LeCompte (1984) of careful observation. The model required an explanation of the physical setting, description of how individuals interacted with the campus, individual and group activities and group interactions, and observed conversation and nonverbal communication, and researcher behavior (Goetz & LeCompte, 1984). I adapted the model to better fit the broader scope the community college environment, including the online and virtual spaces. The overall ethnographic method was still applicable, however the traditional model needed to be changed to describe online venues, such as social media, digital video, and websites (Boellstorf, Nardi, Pearce, & Taylor, 2012; Murthy, 2008). To do so, I borrowed from digital ethnography methods of both including virtual spaces and examining the ways adult learners interact with technology (Boellstorf, et al., 2012). My positionality as an observational researcher was that of the observer as participant (Gold, 1958), where I was present on the campus and interacting, but not a full member in that I do not work or

attend classes at the institution. I examined the way institutions communicate about technology, implement and use technology, and physical spaces where technology must be interacted with in order to perform a task or receive a service. Also included in my observations are the academic contexts including face-to-face, hybrid, and online classes, advising, faculty office hours (virtual and physical), campus tours, and the availability of academic resources.

Internal Observations

An important change from the foundation of scholars in observational research is the need to collect data from the virtual spaces on campus. To do so I gained permission and access to each institution to behave as a prospective student and examine the institution's website and application process, noting when there are only in person or technology options, or when there are both, to move forward. Greendale and Harris granted me guest access from each research site to navigate the online programs and services. With guest access, I was able to view the actual systems that students used and were required to navigate, specifically the student information systems and course management systems. However, my observations of the internal systems were limited as many features required me to be an actual student in order to view the pages with content, as a student would see them. For instance, I could not see the academic records and transcript pages without a course schedule history, and I could not view the billing system with an actual tuition balance and payment required. Some interactions I used to guide myself through the process focused on access to technology, ease of use of various platforms, and availability of support. While collecting this observational data was not true digital ethnographic work, I drew on the work of Dicks, Mason, Coffey, and Atkinson (2005), to observe and describe the culture of technology at the institutions through hypermedia ethnographic methods.

As a supplement to both the adult learner interview data and the virtual observations, I observed the ways that participants use the institution's various online systems. I selected a total of eight participants who felt either less or more confident using the websites and systems. Individually, we sat down with my laptop and accessed the various systems and websites that the participant uses as a student using a second participant protocol (Appendix B). For example, I asked the participants to show me how they applied for admission, where they submit assignments, and how the institution communicates with them (email, social media). By including adult learners who are struggling and those who are doing well, I was able to observe the range of experiences and possible knowledge gaps with understanding the technology. These observations were used to identify gaps or strengths in the ways institutions utilize educational technologies and how students understood and navigated these systems.

Data Analysis

For data analysis, I used Lichtman's (2006) model of identifying themes from the stories of the participants. Generating themes from the volumes of data allows for some sense to be made from the stories of the participants in a way that allows for an aggregated description of what adult learners experience in community colleges. After the interviews were transcribed and observational notes cleaned, I read through all of the available data to code and identify themes, connect those themes, and then interpret the findings.

Data Preparation

The study produced a great deal of raw data: over 40 interviews (nearly 29 hours of interviews) and many observational notes. In order to prepare this much data for analysis, I first transcribed the interviews and organized the field notes. Then I checked the transcripts for accuracy based on my recordings, and invited participants to check their individual transcripts.

The observational field notes I gathered from examining both the physical and virtual campus elements of the research sites needed significant organization. The observation protocols (Appendices B and D) were designed before initial categorization, but further arrangement was necessary for useful classification of cultural elements. My observations of the virtual aspects of the institutions were written progressively as I explored the various platforms, systems, and networks, were completed through the process, however field notes from the physical campus required daily reflection, written up into clear and detailed descriptions of campus culture.

Coding

After I prepared and cleaned the data, I coded the adult learner transcripts with a coding scheme based on Schlossberg's model of marginality and mattering. I used marginality and mattering as two large themes and primary parent codes, but within those codes I employed open-coding strategies to develop a rudimentary coding scheme (Glesne, 2011) from two transcripts from each research site. I tested the coding scheme against additional transcripts until I identified no additional codes from the data for a strengthened coding scheme and increased reliability (Remler & Van Ryzin, 2011). I checked and coded the transcripts with the final coding scheme.

The observational data and transcripts of faculty, staff, and administrators primarily served to assess the culture of technology at the research sites. I open coded these interviews and notes in a similar manner as the adult learner data, with the goal of developing a coding scheme that describes the cultural elements of the institution and educational experience. I then analyzed all of the coded data using Lichtman's (2006) coding process, a process similar to axial coding, where I could reexamine and related the data and codes against one another for relationships, larger themes, and broad concepts (Charmaz, 2006).

In the beginning of the coding process, I began with broad codes: did this interaction with technology make the participant feel as if they were marginal or mattered to the institution, or if their feelings about the interaction were mixed. While broad, I was able to then see experiences specifically with technology in positive or negative sets of feelings. From here, I coded these individual interactions based on participant feelings, such as feeling dismissed, distant, overwhelmed, frustrated, afraid, assumptions, and more. Positive interactions showed feelings of consideration, accommodation, encouragement, and learning. These codes were used specifically with participant experiences with institutional technology, which included the majority of participant data, but was not exhaustive of the experiences of adult learners with their institutions that were affected by technology. I make this distinction as I identified many adult learner stories that were influenced by technology, but not necessarily directly interacting with technology, such as seeking out institutional support, utilizing family, friends or classmates for help, and motivations about learning or avoiding technology.

With these codes established, I returned to the interactions and identified which experiences were directly with the institution and indirectly influenced by the institution. I also identified codes that described pre-enrollment technology factors of participants, including exposure to technology, confidence with computers, digital native behavior, digital immigrant behavior, and whether the participant seemed open or resistant to technology. After checking these codes and evaluating against one another, I looked for themes across the codes, leading to preliminary findings of the study. I progressively presented these codes, quotes, and preliminary findings with a colleague who taught online classes in education and studies adult learners in secondary education, moving toward the findings presented in Chapter 4.

Analytical Framework

The study analysis used the frameworks of marginality and mattering (Schlossberg, 1989) and a typology of digital native and immigrants (Prensky, 2001). These theories were also used during the conception of the study, and they established the means to understand that adult learners may experience technology much differently from what is in the literature about traditional aged college students. As I sought to understand how technology affects adult learners in reference to feeling as if they matter or are marginal, I primary used Schlossberg's framework as an analytical framework.

At the core of marginality and mattering is how students interact with the institution, and the characteristics and contexts of these interactions determine whether a student feels as if they matter, or if they are marginalized by the institution as an organization (Schlossberg, 1989). Schlossberg (1989) also stated that all students have an inherent need to belong. The five dimensions of mattering are of significant analytical utility as they outline a model of feelings and beliefs held by students during the educational process: attention (being noticed), importance (feeling cared about), ego extension (that others will take pride in one's accomplishments), dependence (feeling needed), and appreciation (where one's contributions are valued). While there is no parallel model offered by Schlossberg for marginalization, overall the framework allows for data to be grouped into two large categories, that of positive and negative experiences as was discussed previously.

Ethical Considerations

I received approval from the Michigan State University Institutional Research Board (IRB) to verify that I had all the necessary precautions in place to ensure the confidentiality and safety of the participants of the study. All participants either selected or assigned a pseudonym to

protect their identities, and I stripped the job titles of all faculty, staff, and administrators and provided general job roles to help protect confidentiality. I describe each research site by general details of the institution and geographic area, and assigned each institution a different name to further mask the identities of those involved with the study. I also forwarded each research site a copy of the approval from the Michigan State University IRB. All data and communications for the study were handled and stored securely through my personal cellular telephone, personal computer, and personal server. Both my phone and computer were password protected, and I stored all data on my server where the data which required a two-step verification system in order to ensure appropriate security. Any handwritten notes or paper copies of data or materials were locked in my personal filing cabinet in my home office. I gave all participants a copy of the consent form and study description and assurance of their ability to leave the study at any time without question.

Trustworthiness

Establishing reliability and trustworthiness in qualitative research is necessary in order for the research and findings to be considered valid (Creswell, 2009). Within qualitative research, evaluating research for trustworthiness and validity requires thoughtful procedures that establish credibility transferability of the data and analysis (Lodico, Spaulding, & Voegtle, 2006). To ensure a high level of trustworthiness within a qualitative methodology, I used several methods depending on the data source. The data for the study came from three sources: 1) adult learners; 2) faculty, staff, and administrators; and 3) observations of the physical and virtual campus.

Credibility

Generally, credibility in qualitative research refers to whether or not the findings fit with what is real, specifically from the perspective of the participants (Merriam, 1998). I used research methods that are well established in qualitative research (interviews and observations), which established a foundation for trustworthiness (Shenton, 2004). I established the credibility of the data from adult learners through accurate transcriptions. I also reviewed each transcript for errors throughout the process. I employed member checks to establish credibility, and encouraged participants to check the transcript from their interview for clarity, consistency, and confirmation (Creswell, 2009). I asked all participants if they would be willing to receive digital copies of their transcripts, and everyone except for Dolores said they were willing and able to complete the process digitally for review. I suggested to all participants who had previously identified as being less comfortable with technology that they could call me on the phone with corrections to their transcripts. In Dolores's case, we were able to meet in person one more time to review her transcript. As for the credibility of the faculty, staff, and administrator interviews and observational data, I examined how my observations of digital culture compared to the administrator interviews. Using multiple sources of information are "likely to be much more convincing and accurate" (Yin, 2009, p. 116) than relying only on administrator perceptions of campus technology access and usage by participants. The largest distinction in administrator perceptions and my observations was how technology was not as accessible and user-friendly as the administrators indicated.

Transferability

The idea of transferability is "the extent to which the findings of one study can be applied to other situations" (Merriam, 1998, p. 207). The ability to take findings and conclusions of the

study and apply them to similar contexts is an important aspect of educational research. I increased my ability to make transferable inferences about community colleges serving adult learners by using two research sites with some similarities but also clarifying and contextualizing institutional differences. Also, by providing relevant details of the institutional research sites, the transferability of any claims can be put into juxtaposition of the contexts of the community colleges of the study and the comparisons and contrasts of another institution which was not a data collection location (Shenton, 2004).

Positionality

My positionality as younger than all of my participants, along with my own assumptions about adult learners, may have limited my analysis and interpretation. I was younger than all participants of my study, and also born in the age of digital technology. However, I am not a digital native, as I did not grow up in a home that had a personal computer or internet, and I did not attend a school that provided me with access to computers on a consistent basis. My exposure to computer technologies began in college. I experienced many of the same transitions as my participants as I learned how to be a college student and how to use computers at the same time, and have been able to train others in computer usage including troubleshooting, web design, hardware management, and many software platforms. As a former student affairs professional with strong computer confidence and ability, I have served on committees tasked with making decisions about campus technologies. These experiences complicated how I understood the way that individuals learn new technology. At times I may have projected my own expectations of how adult learners would approach technology, especially new software or systems. However, I believe my experience learning technology as required by my college in

order to be a student, even 15 years ago, allowed me to see the potential for feelings of marginality or mattering in higher education contexts.

Despite being technically a digital native in Prensky's (2001a, 2001b) typology, I do not carry all the privileges of digital nativism, specifically significant experience of exposure to technology during my developmental years. However once I began college, I was quickly immersed in technology, and with the help of peers I was able to build my own computer to use in my residence hall room. The experience of being able to supervised in the assembly of a computer from parts was impactful for multiple reasons, including teaching me how to learn technology from others, the importance of not avoiding technology, and exposing me to a culture that used computers and the internet heavily as part of the community (specifically a residence hall floor where every student but me moved in with their own computer). It could be very easy to confuse my identity as that of a digital native, putting me in juxtaposition against the experiences of the adult learners who volunteered their time in my study. How they interpreted me as a computer user, a possible digital native, was unexplored in the study. If a participant were to have searched my name on the internet, they could have encountered some previous scholarship on technology, and develop assumptions about who I am and how I view technology in education.

While not extensive, I have experience training older individuals how to use computers, informally and formally. Informally, I have taught family members how to use technology toward various goals, including managing small business needs, general interests and entertainment, and also how to use the internet to connect with other people. Formally, I have been asked in my previous roles a student affairs professional, I have had the opportunity to train individuals and groups of users about new technology platforms intended to increase

productivity, access of information, and to stay current as professionals in higher education. Both sets of experiences influenced my assumptions about what people typically struggle with when learning new technology: navigation of the interface, understanding of how the system works, and difficult attitudes about technology (with a spectrum ranging from individuals thinking that they do not need any training or generally unwilling to try or learn the system).

Finally, as an individual, I found myself very different from my participants. I am a person who carries many privileges which may influence how I experienced college, learning new technology, and my interviews. I identify as a white cisgender man who spent most of his life in Texas, a very different cultural and geographic region than the Midwest. I have also been able to succeed in college to varying degrees, matriculated to the point of being a PhD student. I also have no children, and all but five of my participants were parents, some were grandparents, and one participant was about to be a great grandparent. I did begin my educational experience, briefly, at a community college, but graduated from a four-year college. All of these differences represent that I do not view technology, community colleges, academic expectations, and the college experience the same as my participants.

Overall, my positionality was that of being outside the experience that the study participants shared, that of being adult learners at community colleges who have been working with technology as part of their collegiate experience. However my own positionality may have led me to view their experiences specifically as related to technology, and not ask additional questions or gather more data as to the other potential sources of marginalization in their educational experiences. My background with education and technology was of challenge, inconsistent support, and of not fitting in initially due to my lack of collegiate and digital

literacies, and therefore sought out stories from participants which described their disconnection with their schools in a similar manner.

Limitations

All research carries potential limitations to the outcome of the study. Based on the method and data of my study, I have outlined the most salient limitations. Primarily the limitations of the study are related to the convenient manner with which I identified my sample, and the difficulty of relating my findings to academic outcomes, such a student success. My positionality is also a limitation, as I am younger than all study participants and am generally a skilled technology user who may view technology and its use differently from users less comfortable with computers and digital systems.

I recruited participants to the study through purposeful and convenient means. I found adult learners for the study by visiting classrooms, speaking with students in common areas, and soliciting participants through passive advertisements and actively through faculty and staff contacts. Convenience sampling may have suffered from my bias in the way that I solicited participants. The concerning bias is that I only had contact with instructors who I believed to be supportive of my research. For instance, the classes I was able to speak with provided most of my participants, but I was only able to speak to 15 classes at each institution, and all of these classes were identified as having helpful and receptive instructors by supportive contacts at Greendale and Harris. These contacts were generally either individuals I knew from previous research and Midwestern conferences about community colleges, or they were referrals from individuals I had existing relationships with. In order to minimize this sampling bias I sought maximum variation of participants whenever possible by selecting participants from a range of

ages over 35, racial and ethnic backgrounds, gender, academic majors and programs, and experiences with technology.

I was able to generate enough interested adult learners at each site to be able to examine and make choices about participant variation by selecting from a pool of potential adult learners to interview. Increased variation of participants based on age, gender, race/ethnicity, current employment type/level, and academic major increased the credibility, as a diverse study sample is reflective of the overall population (Creswell, 2009). Such a sampling method is sometimes referred to as combination or mixed purposeful, and supports the overall trustworthiness of the study when more strict sampling methods are not appropriate or possible (Patton, 2001).

One of the important factors in selecting participants was their reported comfort and confidence with digital technologies. At the participant recruitment stage of the study, I used confidence and comfort measures as a proxy for digital literacy assessment, but not in a rigorous or validated scale. Some participants may have reported feeling very uncomfortable using technology, but in reality be quite capable of utilizing all the required software packages and platforms required of them at Harris or Greendale. While the initial interviews were used to better understand the digital abilities and literacy of participants, this initial sorting factor may have prevented some participants from being included in the study.

Also, the interviews were measures of single points of time in the participant's educational experience. While the study connects to student success as an factor of the marginality and mattering framework, tying the environment to educational outcomes through interaction, student success cannot be measured in this study beyond a participant identifying whether or not they feel successful. The study does not assume that all students will be

successful in their ambitions, nor that technology must be the primary factor in their continued enrollment and successful academic persistence.

Summary

The aim of the study was to examine and describe how adult learners' interactions with technology influence their feelings of marginality and mattering. Specifically I used a constructivist perspective to explore how adult learners learned the digital technologies required of them by their colleges. I used semi-structured and observations interviews with adult learners, to learn more about how they feel about, use, and learn technology, and how these interactions make them feel as if they matter or are marginal to their institutions. I also conducted interviews with staff from each college to learn more about how they intend for technology to be learned, used, and navigated by students, and observed the campus digital culture virtually and physically to explore how institutional expectations are communicated to students. I coded and analyzed the data looking for themes across the way that adult learners experienced institutional technology. I present these themes as findings in the next chapter.

CHAPTER 4: FINDINGS

The study describes and examines how adult learners' interactions with technology influence their feelings of marginality and mattering. I interviewed 24 adult learners in person at two community colleges in a Midwestern state. I interviewed 12 participants at each site. I also selected four participants from each site for a second interview, observing their behavior and ability with various institutional technologies. Participants in this study represented a range of backgrounds, but all were currently enrolled at their institutions and had completed at least 12 credit hours and had completed at least two semesters at their current school. Eight participants were selected for observational interviews because of identifying as the most or least capable and confident using technology. I also interviewed four staff members at each research site for a total of eight interviews with campus administrators.

My study found that adult learners are generally very interested and motivated to learn digital technologies, especially computers and websites, to better themselves, their lives, and their educational experiences, however as college students they encounter assumptions of computer savviness and no support for learning and developing digital literacy. Some of the obstacles adult learners encountered fear toward technology given previous experiences, the lack of consistent access to computers or the internet, and generally not having experience with the kinds of systems that colleges currently use. These obstacles are amplified by assumptions about adult learners made by Greendale and Harris. Generally, interaction with the college through technology marginalized adult learners and distanced them from the institution, even if technology was providing the access and flexibility needed as a nontraditional student. Interaction with the college through people often made participants feel as if they matter to the institution.

I have organized this chapter as follows. First, I present the findings from the data analysis, beginning with institutional assumptions about digital literacy and confidence of adult learners. Next, I present adult learners as motivated students, who want to become better users of technology. Then, I address institutional assumptions of access, specifically those made by community college institutions regarding computer ownership and broadband connectivity. Finally, I present findings from adult learners about the ways in which their community colleges experiences and interactions with technology influence feelings of marginality and mattering.

Throughout the data, interactions between adult learners and institutions show that digital technologies can influence the way students interpret their place within the community college. Interaction with and through technology was unavoidable for adult learners. For study participants, the collegiate experience required technological interactions, and marginalized participants. Interactions in which participants reported being supported by individuals or institutional mechanisms made adult learners feel as if their experience and identities mattered.

Obstacles Between Adult Learners and Digital Literacy

Older students are very capable of learning technology, but the method of developing computer skills different from what is typically assumed of digital learners in general, as presented by Prensky's digital immigrant concept (2001a, 2001b). Other scholars have described computer behavior among adult learners as hesitant or timid (Kennedy, Judd, Dalgarno, & Waycott, 2010) and as generating anxiety (Brooks, 2013; Clemente, 2010). Both Greendale and Harris Community Colleges operated on observational and anecdotal assessments of digital literacy of their older students, and in my interviews with administrators it was apparent that their decision making processes were informed by their limited experiences and cost.

Administrators at each institution felt that digital literacy of their students, regardless of age or generation, was rarely a factor in student retention or graduation. Sheila, a mid-level academic administrator at Harris Community College, serves on a committee responsible for making recommendations to the board of trustees on technologies to implement or remove, based on institutional research. Sheila revealed during an interview there was no plan or process for collecting data on technological ability or digital literacy at Harris. "If we see that a student routinely does not log in to the course management system, we generally assume that is a student who is struggling with attendance, not that they are having difficulty or frustrations with our technological components."

Ahman, a senior information technology (IT) professional at Greendale, echoed this statement when he said, "The technology is fine, my team works hard to ensure that the process is smooth and the interface is clear and intuitive. The process is similar to the application process, so if a student can apply, they can do the rest." Assuming a student is able to navigate the admissions portal also assumes what the process was like for users. Some participants described the admissions process as a stressful and convoluted process, primarily because of unfamiliarity with that specific technology. For instance Emma, a 39-year-old temporary worker for various non-profits, said that "I knew I'd get a faster response than if I mailed in a paper application so I had a coworker help me know what to do."

The process was also frustrating for Rose, a 57-year-old food service professional studying business at Harris Community College. Rose was using a version of the site designed for individuals with limited or impaired vision, where text is larger and less information is included on each individual page. She took too long on a single page entering her information and typing a response to an open-ended question so that when submitting that individual page,

the site timed out and refreshed her page without all of the information she spent approximately 30 minutes entering. If the admissions portal is itself a difficulty for students, even the concept of access is called into question. Both Greendale and Harris offer support for the admissions process, but that information is either nested under a "how to apply" page or under a "FAQ" styled list on the admissions site.

An interesting difference between the digital culture of Greendale and Harris began with the admissions process. For Greendale, all available online information says that students will apply for admission through the institutional website, beginning with creating a student account requiring an email address. From there, there are multiple other systems which must be navigated only online, from skills assessments to an online self-paced orientation, and ultimately class registration. There is no indication that the process can be completed in person at the admissions office or that a paper application would be accepted. A call to the admissions office revealed that staff there would be willing to assist applicants with the digital process if they could come by and work with them, but this information had to be verified before they could confirm it to me. Harris Community College was upfront on their admissions page, and other locations online, that applicants were welcome to come to their office or satellite locations and receive assistance with the "in person application" process. Overall, this difference was the main gateway distinction between the two institutions, but as the application process is the first step toward becoming a student, Harris is communicating a culture of support with technology at this first step, something not present with Greendale.

Operating based on only assumed or limited anecdotal data is currently a necessity for both Harris and Greendale, and both institutions were in need of additional student data, especially on digital literacy of adult learners. Interviews with administrators involved with

technology recommendations and implementations illuminated the process of technological design making. Ultimate authority resides with the boards of trustees, however administrators interviewed for this study shared that primary concerns were of cost and ease of implementation (technical requirements, time, and existing staff qualifications) and that the board typically followed the recommendations of their senior IT professionals. Student experience with technology and academic platforms did influence discussion, but according to study administrators and staff, board decision did not reflect what might be best for the student. Interviews and observations with adult learners at both Greendale and Harris Community Colleges demonstrate that the institutional assumptions of digital literacy of students have created undesirable conditions for student success.

Frailty of Technology

Having experienced technology when computers were much more expensive to own and maintain, older study participants view technology as a "high-risk and low-reward" game, a concept of persistent attitudes of the frailty of technology. Literature on younger generations suggests that software designers expect user to learn experientially (no tutorials, "user friendly" graphic user interfaces, heavy use of icons as opposed to words or labels) (Clemente, 2010; Teo, 2013). Through interviews and observations, participants reported or displayed hesitation and careful behavior with digital technology. Some participants described feeling anxious with digital technology because of a worry of doing something wrong which would result in expensive and irreversible consequences. One participant, LaShawnda, a 39-year-old nursing student at Greendale, summarized the idea of fragility of computers:

> If I screw something up because I didn't know how to do something, I certainly wouldn't know how to fix it! What if I drop all my classes? I had to call and have my advisor do [class registration] for me over the phone even though she said she wasn't supposed to!

LaShawndra's concern mirrors the findings of Kenny, Judd, Dalgarno, and Waycott (2010), who found that older digital immigrants often struggled with feeling comfortable with computers and digital technologies due to worries of breaking the equipment or website. Hesitation with technology, such as worrying about altering the way a website appears or accidentally clicking a wrong button, reflects a misunderstanding of how websites and Internet browsers work, yet the ability to accidentally drop classes or delete a submitted assignment are real concerns of adult learners.

Participants also worried about misusing and breaking computer hardware, including hard drives, keyboards, displays, and input peripherals (such as mice, USB receivers, and power supplies). I conducted all observational interviews with technology on my personal laptop, which may have added to worries of breaking technology. David, a retired 65-year-old political science student at Greendale, never used a wireless optical mouse before our observational interview, and was especially concerned that there were more than two buttons and a scroll wheel on the mouse for our interview (the wireless optical mouse featured side buttons for scrolling and navigation, as well as adjustable sensitivity settings). He stressed that he was more worried about hitting the wrong button on the mouse just because it was there than what the button would actually do (which would only scroll the existing page content down by 33%). Input devices are integral to the design of modern technology, and demonstrates the motivation behind operating systems becoming more user friendly. When Apple began shipping a computer mouse with their

desktop computers, home computers became more accessible because the mouse extended user input ability beyond command prompts.

Beyond David's discomfort with certain types of peripheral devices, he was also very concerned about which buttons on websites symbolized a "save" or "submit" function. "Save and continue? Save and display? Continue? The only button I know for sure is 'Cancel' because I've lost work using that particular option," David said as he demonstrated how to submit a Word document for an online government class assignment. There were no instructions or resources for David, and I had to remind him of the site he needed to register for next semester's classes. David relied on a handwritten list of websites for Greendale he taped to the front of a cabinet on his desk (where he wrote papers and checked email on a desktop computer he purchased in 2004, a luxury he has not been able to afford to upgrade). While David's handwritten note is a useful tool at home, whenever he tried to use another workstation (which he did often with his part-time job with a local government official) he was unable to have full functionality as a student. David said he was very frustrated and anxious when he typed the wrong addresses for webpages because for a moment he was convinced he broke something with my computer instead of mistyping. Toward the end of the observational interview, David began to relax and said, "When I first used a computer back in the early 90s, I typed the wrong command and erased a software [program] somehow. I don't know how I did it, but my friend never let me live it down. I don't want to do that again."

Only a few participants had anything more than weekly access to a computer before they were 18, and two study participants did not have access to a computer until they were adults. Both LaShawndra and David show how shared stories where they viewed computers as a very fragile and potentially vulnerable interface. Many other participants also worried that breaking

institutional technologies or information was possible and worthy of concern. Many study participants confirmed this finding, especially those over the age of 40 who typically did not gain consistent access to digital technologies such as computers until they were adults. Yun is a 62-year-old student at Harris Community College studying criminal justice, and she does not have access to a computer in her home. However, Yun does use a computer at work in her role as an administrative assistant. Very little of her employment requires working on a computer. In order to complete her schoolwork she goes to her neighborhood library. The first semester as a student, Yun had someone assist her at the library for all school related tasks, including responding to emails, submitting assignments, and looking up office numbers and locations so she could utilize their services in person. Eventually Yun exhausted the patience of the library staff and almost did not finish her first semester because of her anxiety about using computers for her assignments until her granddaughter came to stay with her and brought a laptop computer into Yun's home.

Yun described her computer anxiety as "paralyzing" so she would write her papers by hand and pay a coworker to type them for her. Now a student entering her last semester before graduating with an associate degree, Yun has managed the system enough to be successful, but still does not feel that she is technologically capable or literate. Her fears and anxiety about technology have lessened, but she relies on others to assist her with nearly every step of the process when completing an online task as a student. Classifying herself as someone who hates to make a mistake, Yun's fears describe the inability to try and fail with computers, a method of experiential learning that younger generations do not seem to struggle with (Clemente, 2010).

Maria shared a similar perspective to Yun, where technology represented a fear to be conquered instead of a tool. As someone who works full-time in conference center management,

Maria uses computers on a daily basis, but with very specific software. Her ability to use that software came from intensive training from her employer as she described:

> After I had been working for the a large scale event venue for over 15 years, we got new owners as we got busier. Honestly we needed technology because we ran out of wall space to hang up our schedules! But as a manager, I was terrified by computers, and this is the only job I've ever done. The new owners brought in a company to set up computers, scheduling software, everything, and spent two weeks training us. Every time we get a big update we bring more trainers in so that we're sure we know what we're doing but it's still terrifying to me. I only know how to use this software, from this company. That's part of why I'm back at Greendale, because I want to be promoted and I need an associate's to be eligible. I can't go anywhere else because I don't know that I'd get as much training and support.

Maria's experience with technology demonstrated her capability to learn, but that she needed guidance and support. She felt her fear of technology is still justified, despite feeling capable of doing her job because:

> Computers have made my life so much easier at work, but one time when something went wrong, a server issue or corruption of our schedules, we were lost. We didn't have any paper versions except for the signed contracts, so it was a nightmare. After things calmed down some, the company we contracted with brought in a team to audit the error, and found that someone uploaded a corrupted schedule file into the system and brought the whole thing down! He [the employee who uploaded the file] had no idea what he did, or that the file was broken, and none of us knew you could 'break' a file. We referred to it as a matchbook house from then on and had to be extra careful with everything.

The situation Maria described occurred about 8 years before our interview, and nothing like it has happened again, however the fear persists.

Concern that technology can and will fail had a strong effect on Maria and influenced her attitude about the course management system at Greendale. While she described getting access to her course as cumbersome, requiring several pages before reaching course content, she would always email the instructor with her assignments attached as a backup to the dropbox feature for the class. Though she never remembered a time when the dropbox lost her assignments throughout her experience as a student, she still preferred to have a backup plan because of her worry that technology would break down and leave her to suffer the academic consequences.

Among the participants, the age when one first started using technology mattered more than when one was born. An observational interview with Robin, a 47-year-old hospitality student at Harris Community College, showed that despite being much older than the digital native generation and more than half of the study participants, she was very comfortable, confident, and capable using digital technologies. Some of the strengths Robin demonstrated were using software add-ons (improvements to word processing software), a digital library and citation manager, and browser extensions to improve efficiency. During our observational interview, Robin first asked if she could log me out of my Chrome browser and log in her own account, so that she would have access to her bookmarks, passwords, custom homepage, and settings optimized for her user profile. Robin identified herself in the initial interview as a "power user" because her father began working with computers in the early 1960s, and they were the first family in her town to have personal computing devices at home.

Despite Robin's age placing her in the "digital immigrant" generation as an adult learner, her level of ability using technology is reflective of her experience. When asked if she ever felt

apprehensive about using a computer or software she said, “There was no fear, it was all about exploration. My dad was really supportive that there wasn’t anything I could do to the computer that he couldn’t fix. Playing Pac-Man and seeing the screen scared me initially, but once I learned that computers just do that, it was all okay.” The removal of fear was important in Robin’s story because it demonstrates how, in her experience, being taught technology in a way that made it accessible, useful, and positive, she did not feel that technology was overly fragile. Robin’s advantages included both early access to computers and the knowledge that computers themselves were modular and repairable:

> [My] Dad took the whole thing apart one time, right down to the motherboard. He was installing something new, maybe memory or a processor, and while he was gentle like a surgeon, he showed me that the parts in our computer were generally removable. While some pieces were permanently welded [soldered] together, others just plugged in, not unlike the toaster. And he could add new parts? Make it better or faster? Knowing it could be fixed really made me feel both curious and eager to try some new things. Ironically I was encouraged to use the computer, but not the toaster, because I was much more likely to burn myself than erase the computer!

While Robin’s experience is unique among participants near her age, based upon other participants in the study, her story affirms other experiences that technology needs to be presented as something useful and adaptable, instead of reinforcing fears of breaking the computer or erasing important data. Bill is a 58 year old automotive technology student at Harris, who felt that technology was fragile and worried he would break his iPad if he pushed too hard on the screen. I asked Bill about his first experiences with car repair and he said “my grandpa just had me open it up, see how it worked, and made me get my hands dirty.” Bill told me he was

never worried about driving or working on his cars because he knew he could fix it. If Bill ever encountered a car problem he couldn't fix "well that's what shops are for" and he did not mind paying another person to do what he could not. I asked Bill about the difference in his attitude toward fixing his car and computers, and he said that does not know enough about computers to tell if he is being treated fairly when at a computer repair business. Addressing Bill's fear of computer repairs is not as simple as relating them to his cars, and instead requires education about computers and how to prepare for and adapt for when digital technology fails.

Jenny is the youngest participant, a 35-year-old Greendale student studying education. Jenny was born just on the cusp of what some consider the beginning of the digital generational divide (Tapscott, 1998). By the time Jenny was five, her home had a Commodore 64, one of the earlier and more popular home computers mass-produced (Edwards, 2008). For Jenny, having a computer in the home since she could remember made them a staple in her life, as her family updated the home computer every several years. Its usage in her family was immense:

> The family computer was THE family computer and we all used it. Me and my two younger brothers, we had to have a schedule for it, and my parents used it after we went to bed. School projects, homework, playing games, my mom started making banners for every occasion as soon as we got a dot matrix printer! We had rules though, what we could do, what we couldn't, and that anytime I wanted to use a different program on the Commodore 64, I had to have my dad come and switch over for me. It was very clear that I could use it, but I didn't need to understand it.

In Jenny's home she also picked up a lot of patterns of use, which she continues to this day, such as always shutting a computer down when she is done using it and always keeping a backup copy of her documents. She learned of the frailty of technology from her initial exposure to

computers through her parents, who meet the description of digital immigrants in the careful and precise way they controlled the computer usage. While Jenny's habits of being careful and redundant with her computer and documents are good to keep with her, she demonstrates the importance of not relying on technology to be infallible. Even if her computer does break, she can take her work to another computer (at work, the library, a campus computer lab, or a friend).

Technological Changes Since Previous Enrollment

Each participant was last enrolled in a postsecondary institution more than 15 years before data collection, if they had attended before college before at all. Over the years between previous and current enrollments, digital and educational technology has changed significantly. During Jerome's interview, I asked him as a follow up to one of his answers if he felt he knew enough about computers to be successful in his pursuit of an associate degree in criminal justice and possible admission to a four-year college for his bachelor's. His response revealed that even he had not considered this dynamic in his education as he shared:

> I just don't know. I never even thought about it you know? I was careful, picked a school that I could afford, where I knew what I would learn, applied for some scholarships and ran this whole plan so that I could do this, and do it right. Then I get here and had no idea what the rest of it looked like. I went to school right out of high school for a bit, but I wasn't ready, but now here we are 20 years later and it's a different ballgame. I thought 'yeah I can go to the library once or twice a week, write my papers, get in, get out.' But I didn't know I'd need to be logging on every night. I don't have a computer or Internet at home, I make sure my kids have that at their mom's house, so if I need to do something, I have to use my lunch break at work or find time to go to the library, and that's been a real adjustment.

Jerome's story is telling, and also not unique to the study. With everything that changed, it appears as if institutions assumed that students would either have developed the necessary skills, or acquire them while in school.

Even when technology is part of the curriculum, advancements of computers and usage of technology in education represented a barrier that had to be overcome. Megan is an artist, who at age 44, enrolled at Harris Community College to study digital media arts and expand her canvas. Her ambition is to continue to learn about various software packages so that she can experiment with graphic design and 3-D animation in ways that would take her much longer should she self-study. When I asked about what was different between now and the first time she attended college she shared:

> Everything, which was expected. I knew that the world has moved and that I needed to as well, and that if I wanted to continue to support myself as an artist, I needed to "go digital." I wasn't going to learn what I needed to learn unless technology was there. But, I didn't anticipate all of the expectations. The months leading up to starting classes were cluttered with emails about things I had to log onto, set preferences, type the same information over and over again. And then I'm finally registered for classes, one being "Intro to Adobe Photoshop" and the instructor emails telling me that there's a base level of Photoshop skills expected before I even step in the class! We figured it out though. The professor met with me early and got me up to speed, even though she wasn't paid for it.

For Megan, it was all about technology, but even for her the bar was set in a way that felt different than her first time in school. Before she "wasn't ever expected to know something about political science before class, I was going to the class to learn political science!" Both

Jerome and Megan's stories demonstrate how technology has changed, and the assumption that students are technologically prepared to be community college students.

While each site's administration and institutional research offices described ambitious assessment agendas for determining student need, the assumption that students enroll with required technological literacies in order to be successful students is problematic. Greendale and Harris both assess writing, math, and language skills of students through placement examinations and review of transfer credit, as these topics are believed to be reflections of students' requisite needs in order to not set the student up for failure. By assessing a student's ability, advisors can place a student into a course for which they are prepared. Digital literacy of adult learners should not be assumed because how institutions build, implement, and require digital systems are virtual gatekeepers to educational opportunity.

Learning the Medium, then the Message

An often frustrating dynamic for adult learners was the use of digital platforms for communication, various student services, and instruction, requiring that they had to first learn the medium before they could learn the message. Only four participants experienced some form of compulsory pre-emptive support for the technological systems they would be using, and all four encountered such support through the same online writing course. The course used an introductory module before class began that assessed the student's access to technology as it related to the course. The module asked students about their computer ownership, access to computers, whether they had internet connectivity in their home, and also included an internet speed test within the module. The module was designed to determine if students had the necessary technology to connect, but also asked about the amount of time the student expected to spend each day working on course requirements. Encountering this assessment module could be

considered a brief training on the kinds of software they would be using in their classes (primarily the course management system). This module was the only assessment of a student's digital literacy found at either Greendale or Harris.

The kinds of media used at Greendale and Harris included email interfaces, course management systems, social media presences, institutional websites, and required information systems used to provide student services. Also included in the communication platforms was mobile text messaging, an initiative implemented by Harris and Greendale to send automated text messages to students for important safety announcements. Each platform represented a distinct system for communicating information from institution to student. While administrators at both institutions identified intentional redundancy in information availability and dissemination, the multiple systems created difficulty for study participants. For instance, a 55-year-old Harris student named Sheryl expressed frustration over the multiple systems she had to learn:

> Sign into my course and read the announcements, but those are class announcements about grading, changes, and the like. And then I get into email and see an announcement about a parking lot construction update. So I read that email and it says 'to see alternative parking locations, see the map on our Facebook page.' I hop over to Facebook to see where I'll need to park next week. Then I remember I have to check and make sure my class for the summer hasn't been canceled so I sign in there too. I've figured it out, but I have to go everywhere to do one thing! It's the modern campus shuffle!

What Sheryl referred to as the "campus shuffle" was what she experienced as a college student when she was 18 — she would be sent back and forth from buildings and offices for services such as enrollment, registration, financial aid, and bursar. For Sheryl "each page looks a little or

a lot different, puts the button in a different place, and doesn't always have the same password, and I have to learn each one over again nearly every semester."

Earl, a business student at Greendale, reinforced Sheryl's sentiments as he summarized his experience with various platforms he had to navigate as "the rat in the maze." Earl described himself as "hungry" for an education, and more specifically for a degree. He was enjoying his classes, and loved learning more about how to be a better manager for his sales team at his job, but he felt that he was the rat in the maze when it came to trying to get all the information he needed as a student:

> I want the cheese, and I'm willing to go down all the wrong paths to find the right one, but do you know how crazy it is to call someone up here at Greendale and just be told 'it's on the website?' I'm hungry, but I need something now, not in an hour clicking around.

Sheryl and Earl illustrate the tension between the need for information and institutional reliance on digital platforms to disseminate and house that information. Ideally, use of digital mediums to share information is more efficient, being faster to create, update, and send information. However, the implementation might represent barriers to students, as is demonstrated by the participants in the study if the systems are not implemented well or integrated with institutional consistency.

Administrators from both sites said that they believed their sites and systems were very user friendly and have not heard any concerns about how to manage platforms. Administrators at both sites used the phrase "user intuitive" in reference to how systems and sites are designed for all users to understand. I asked if the intuitive aspect of navigation actually referred to the student needing to be intuitive, and Ahmad, a senior IT professional at Greendale said, "Our sites

and web pages are reflective of how all of the Internet is designed now, modeling intuitive design that reflects how users have already learned to navigate the web." What Ahmad was referring to is a general web design practice of "using icons instead of words, navigation maps on the top and side of web pages, and a robust site search engine." Ahmad identified that a baseline of digital literacy is assumed and expected for successful system navigation. However, as I previously described, making assumptions about the digital literacy of adult learners is not an adequate way to ensure their needs are being supported and met.

Several participants across the two sites said they would request support, and often had positive, yet initially frustrating, interactions with resources they encountered, such as Earl mentioned. These resources included phone services to a "help desk" hotline for general information technology services, but at neither site were these services intended to help students know how to navigate institutional systems and webpages. I made phone calls to both sites' hotlines and found that students answering calls are not trained to provide services for student systems and webpages, but instead to help with technical problems involving connecting to the institution's network and are typically used more often by faculty and staff. However, they often provide support for struggling students with campus technological navigation because they are also students and want to help. Participants had to learn how to reach content, including academic content or student experience information (e.g. advising, registration, paying bills, contacting advisors and faculty). While none of the systems were overwhelmingly difficult to learn and all participants have managed to matriculate from one semester to another, frustration with the institutional digital platforms persisted for participants.

Adult Learner Motivations

All 24 study participants reported that they were motivated to improve at using digital technologies, especially web-based systems and professional software (programs for word processing, spreadsheets, presentations). Adult learners were frustrated with technology getting in the way of content, and many felt unmotivated to learn how to use Facebook, Twitter, or other platforms just to succeed in the course (Brazelton, 2013). Motivation is important because of institutional assumptions at both sites that adult learners simply did not want to know how to correctly use the course management software, student information systems, and other technologies. Participants shared their motivations as important to their decisions to come back to school, and that very little, including technology, was going to prevent them from accomplishing their academic goals. Motivation to succeed might lead to the effect of marginalization due to technology being lessened, as feeling marginalized or disconnected by technology never led to any study participants giving up or leaving college. Two major motivators arose from participants' responses —to improve their skills and value as an employee and professional and to remain up-to-date with increasingly digital culture. Both of these motivators manifested as both intrinsic and extrinsic, but all participants described a sentiment of it being "valuable" to know how to use technology.

Motivations for Attending

All participants but one were attending a community college to improve their professional lives, whether it was to change industries, be more likely to be promoted, or start their own businesses.. Participants identified higher education as an avenue for professional and upward mobility. Overall, career ambitions were primary motivators for study participants. However, within participants' desires to be professionally successful was a need to develop

technological and digital literacies. Bill is studying automotive technology at Harris Community College after working for years as a service mechanic for automotive engineers at a large US car manufacturer. Bill retired early several years ago, as he found himself frustrated by digital systems in newer automobiles. Bill explained why he returned to school after nearly 40 years as, "I want to open my own shop and be a good and honest mechanic. I retired after 30 years in the plant, but now I want to leave something behind, and a good shop is what I can do. But you can't work on cars unless you know how to use computers and iPads now, and I'm ready to learn some new tricks." Bill also described that he is often frustrated with having to check his email every day ("even the post only comes 6 days a week!"), and he knows that if he wants to own and run his own shop, he needs to "understand how to do Facebook for customers, get good reviews on Google, run a digital inventory." Motivation is not an issue for Bill, as everything he wants to accomplish requires more than a basic understanding of how software is designed and used.

Greendale Community College hospitality student Maria shared how her lack of technological skills was affecting her ability to be promoted because "the higher up you go, the more you need to know, and my company knows that I tend to shy away from computers except for email and the occasional meeting agenda. I want to be more comfortable just figuring things out but I just don't know where to start." Even when working with institutional systems, such as the student information system where Maria checks her bill and grades, "I have to start the process fresh each time, because I only log on once or twice a semester, and each time they change the site. They say its 'user friendly' but the pages I need keep moving." However, Maria does not let this experience shake her resolve and has become more confident calling the school's help desk hotline, even if it is not necessarily a strict computer issue. She shared, "I'm not learning very well on my own so I started calling. Some of the kids know me now and help

me out quite a bit! They've helped me figure things out and especially how to ask my questions too."

Nearly all of participants spoke of learning various systems and technologies related to their professional goals, platforms designed for specific purposes. Some also shared anxiety about being able to learn these technologies regardless of motivations because of their experiences learning and navigating basic systems and technologies at their community colleges. Maureen is a nursing student at Greendale, and recalled how much difficulty she had her first semester as a student:

> Everything was foreign. Yeah I can get my email, when I remember to check my school account, but registering for classes was a nightmare. I had to go to three different websites to see the classes, see what I needed to take, and to sign up for the classes. Each page was designed completely differently, and I just got lost. I know it shouldn't be that hard, so is it me? Is this going to be what it's like when I'm taking or entering notes for patients? I feel like I just don't know how to do this online stuff right and don't know how to get better.

Another participant from Greendale, Earl, also felt unconfident with the amount of technology he did not understand. Earl has been a car salesman for more than 20 years and was told he needs at least an associate degree to finally move up to a management position. His biggest frustration was his school's use of online courses instead of traditional face-to-face class meetings. Online postings, uploading assignments in cumbersome systems, and video chats were the biggest technical issues for Earl. Video chats were especially a source of anxiety for Earl because he felt it "should be really simple, click this, click that, but the volume is echoing, I never know where

to look, and I've bought three different webcams and can't seem to get any of them to work every time."

At the core of Earl's frustrations is a misunderstanding of how software is designed because the graphic user interface does not make sense to him. Earl wants software to tell him what icons on buttons and options mean, not leave him to make assumptions or interpretations. Both Earl and Maureen, in addition to other participants with similar technical issues, show that older participants learn technology literally and anxiously, which is consistent with Prensky's (2001a, 2001b) concept of digital natives and immigrants. The study participants want to learn necessary technologies to be successful first as students, and then in their professions; however the disconnects between motivations and success are confidence, digital literacy, and support.

Learning Technology for Its Own Sake

"Learning is its own reward," according to Delores, a 71-year-old music and performing arts student at Harris Community College. Delores's sentiment reflects her desire to study theater as a retired adult who also believes that one should never stop learning. Delores shared how excited she was to learn how to use the digital lighting system for the theater she was performing in, and she recalled "and I'll never even use the thing, I'd rather be down on the stage far away from it, but there's no reason to not know it." While nearly all of study participants were focused on improving their professional lives and serving their career ambitions as primary motivators, all participants shared Delores's sentiment that there was value in learning.

When asked if they would like to be better at using technology, every participant shared that they wanted to be more capable, confident, or skilled with computers. However the motivation of improving with digital technologies, such as computers and websites, was rarely identified by adult learners as part of their decision to return to school. The disconnect between

the desire to learn technology and what participants wanted to learn in college represents an important dimension of many participants, how they demonstrated little to no consideration or preparation for technological requirements of being a college student.

Despite this disconnect, participants did value improving their digital literacy. As very few identified computer skills as a learning objective of their collegiate experience, the value placed on learning technology was on being a well-rounded person and lifelong learner. Delores's interview provided context for this value, as she was a retiree who did not need a degree to advance her career or benefit her profession, but instead to support and enrich herself. She never planned on building a website or constructing a social media marketing agenda, but she saw value in understanding how touchscreens are designed so that she could learn skills that worked across platforms. Delores was the oldest participant, but I found her philosophy also with Aaron, the second youngest study participant, who was a 36-year-old Greendale student studying dental hygiene. Aaron both enjoys and is fairly proficient at using computers and digital technologies. While he was not without his struggles with required platforms at Greendale, he shared that he "learns computers because it's how we operate now, and I want to be part of the world that contributes, and doesn't just consume." When it came to learning new technologies Aaron would often build off of what he already knew, and found that was sufficient to manage what was expected of him as a student.

I observed Aaron's computer usage in a second interview, as he was identified as a capable user who felt confident in his skills at "decoding" the way Greendale designed various web systems. In his second interview, Aaron showed me how he looked for clues on the sites, such as icons, particular phrases, or even site architecture to know where he needed to go next. He also opened all links in a separate window or tab in a browser so that he wouldn't have to use

the “back” button on the browser, which might not display the original screen because of security concerns. He learned a lot of his skill through trial and error, he said, but also because he had spent several years working in food service. In restaurants as both a waiter and a cook, Aaron described how “POS” or “point of sale” systems were used to ensure efficiency in food operations and that interfaces were rarely designed in a way that was intuitive to him so he learned how to teach himself how not be afraid of trying something and to keep track of how systems were navigated. Aaron felt that “technology isn’t going away and it doesn’t need to, but there’s power in knowing tech, even if it’s just to feel a little more confident in who you are as a person in a modern world.” Overall, motivations were very clear among study participants, and as adult learners they were all direct that they were in school for specific reasons.

Access is Key

Technology provides flexibility and opportunity for those who are unable to consistently come to campus to take advantage of classes, and services. Both institutions were very proud of their ability to provide educational opportunities for those who worked full-time, had families or other responsibilities, or were not within a daily commutable distance. However, such opportunities overcame the obstacle of physical distance by presenting another difficulty: digital access. On the surface, participating with digital culture and opportunities of institutions only requires a computer with an Internet connection, a sentiment shared at both institutions in promotional materials, and by administrators interviewed for the study. However, participants like Maureen had computing devices, including a smart phone and an older laptop computer, but did not have broadband access. Other participants only had access to computers at work, public libraries, or on campus. Several older participants (older than 50 years old) identified having a tablet as their primary personal computing device. Many participants found themselves having

difficulty being digitally connected to their educational experience because of a lack of consistent computer or internet access, but also because of how technology had changed course participation expectations.

Digital Nomads

Adult learners in the study illuminated an interesting obstacle for them to overcome in terms of computer access. Most study participants had general computer access, however it was rarely on a single, personal computing machine. Nearly all participants had a home computer, typically a desktop computer that was available to their whole household (ranging in size from two individuals to nine family members in another case). Computers at work were also common among study participants, and at minimum there was access to a computer at each participant's work place. Approximately half of the participants owned a smart phone or tablet, however most did not consider these devices to be computers. The concept of having a primary computer where one does most of their student tasks was not common among participants, as most found themselves using the most convenient computer available to them. These students behave in a digital nomadic manner, where their computing wanders from one device to another.

Digital nomads represent similar opportunities and obstacles as virtual campuses and online classes in general, where flexibility of being able to connect on a variety of workstations is weighed against the inability to become used to a single device or point of access. When asking participants to use my personal laptop to demonstrate which platforms they use as students and how, each participant had to adjust to my computer. The laptop used has a standard sized keyboard, optical mouse (as opposed to a track pad), and a large display, yet there was still an adjustment period. All participants whom I observed reported the Windows operating system as the system of which they were the most familiar.

Study participants' comfort with their digital nomadism demonstrated confidence and capability, demonstrating resilience and possibly a building block for developing other digital literacies. Several participants said that owning a private laptop that they did not have to share with other family members, especially children, would benefit their academic endeavors, but did not find it to be necessary to accomplish their academic tasks. Only a few participants indicated frustration with not being able to have a primary computer workstation where they could work on class assignments, review grades, or other digital student activity. For these participants, working across multiple devices was all they had ever known and therefore were not aware of what benefits a personal computing device might provide.

The lack of a consistent workstation did not seem to be a concern for many participants, as the circumstances were all the adult learners knew. When asked how they keep their files consistent across computers, only a few indicated they used cloud computing to sync files. Emailing files and USB flash drives were the most common method for maintaining files. Jerome, a prison guard studying criminal justice at Harris Community College, often took advantage of wherever he could to do work, including computers at his children's' schools, where he had made arrangements with teachers and administrators. Jerome said "soccer practice, play practice, kids just wanting to hang out after hours for an event or some tutoring, that's a chance for me to get some work done." Such resourcefulness illustrates the flexibility of adult learners, even if they do not feel confident with computers. Jerome described his document management process as "open, save, date, email, rinse, repeat" as he relied on emailing his documents to himself in a separate account just for assignments he was working on. Jerome had not considered using cloud services to manage this aspect of his digital nomadism, but primarily

because “I just don’t know how all that works, and if I’m going to rely on something, I better know how it works.”

For Robin, having to use multiple workstations resulted in the development of her digital literacy instead of hindering her confidence or comfort with digital devices. As a 47-year-old hospitality student at Harris Community College, Robin needed to complete her schoolwork and other student tasks whenever and wherever she could, whether at work as a hotel desk clerk, at home with her family, in a campus computer lab, or at her daughter’s home when she would watch her grandson. Robin estimated that one of her papers was likely written “bit by bit on at least a dozen computers” during a busy week of work, school, and life. This method was initially challenging for Robin, but she was motivated to succeed and do more than “good enough” and described her method for digital success:

> First, I took a chance at looking helpless, and asked people who seemed like they knew computers for help. From there I learned about Google Documents, dropbox, and got an education on “the cloud.” After that I started reading web stories about productivity, and found all kinds of great tips. After some trial and error, and lots of confusing moments, I found some that made sense to me and worked. Did you know that if you use Google’s Internet browser that it saves and uses your information across whatever computer you use? It’s a little creepy but it saved my bacon because then it had all of my saved sites, passwords, and even my history. I’ve even been able to put chrome on my phone and I get all my information there! No matter where I go, if I have Internet, I have my work. If only we had Internet at the bus stop!

Robin’s story was powerful as it demonstrated the treatment of a technological challenge as an opportunity, and stemming from an initial set of education and training on the benefits of cloud

computing, she was very capable. And unfortunately Robin's case was not the norm among participants; however, her story illustrates how training and support for digital skills can benefit adult learners.

While Jerome and Robin demonstrate the resilience of adult learners with technology, frustration and failure were also products of digital nomadism. Sometimes Jerome found himself trying to work at locations without internet access and thus was unable to access his documents. Sheryl also experienced frustration with relying on internet access in her digital nomadism, as she could work on her assignments before or after her shifts as a hotel housekeeper using an available computer in her boss's office. However, the websites where she needed to submit her work and participate in class forums were blocked by her employer's security filter. She shared:

> I thank my boss for letting me use her computer if work is slow, or around my shifts, because as soon as I get home I have to be a mother, grandmother and wife, so it's hard to sit in front of the family computer at home. But if I can't send my paper in, then I don't know if I'll remember or be able to later. That's not the teacher's fault, or my boss, but I just wish I had my own computer to use.

Sheryl not having a portable computer frustrated her, and she experience multiple late assignments due to having to wait until she had time, computer access, and reliable internet to submit her work.

Sheryl also shared her dream of being "one of those students who goes to a coffee shop with their laptop, a stack of books, and a big cappuccino!" Perhaps Sheryl was describing a college student archetype, one that she felt represented how a traditional student might spend a day off. Sheryl may find some solace in learning that most of her peers from the study also did not have a personal laptop. Although many had mobile computing devices, such as tablets and

smart phones, no participants said they used their mobile devices for writing papers or completing academic work of any kind. For many participants, mobile devices provided access to email and other communication with their instructors and institutions, but they did not improve their access to institutional systems or coursework.

Jenny was possibly the most capable and confident study participant when it came to overall digital literacy, but even for her, mobile devices were for communication and not academic work. Jenny said "I lug a laptop everywhere, I love my MacBook, but I do that because there's just some stuff I can't do on my iPhone. Have you tried connecting to our course software on your phone? It's nearly impossible." While Jenny was familiar with and sometimes used personal computers with a Windows operating system, she also used and preferred her personal Apple computer. Adult learners are flexible and resilient, because they have to be as they find themselves as mobile learners, or digital nomads.

Lack of Assessment of Student Needs or Experiences

A sentiment of "I've never been asked" was common in the interviews when participants recalled whether or not their respective institutions ever surveyed or polled their technological needs or abilities. All participants had to interact with their institutions digitally, through virtual office hours, email, online systems, and digital kiosks to "check in" to appointments on campus. Thirteen study participants had taken a completely online class, and 23 had experienced a some hybrid class experience with online requirements (but not always aware they had experience a hybrid class experience), such as logging into a course management system to view and download readings, submit assignments, or engage in an online discussion. Despite such a heavy expectation of virtual participation, institutions did not ask any participants if they are comfortable, confident, or capable with digital technologies and computers. Greendale and

Harris did not assess digital literacy, and assumed that all students were capable of navigating the digital college. In the initial round of interviews I asked study participants if their respective institutions ever took into consideration their skill levels with technology. Only four participants across both sites reported having their learners' abilities, comfort, or interest in technology assessed through an introductory module in an online writing course. Interviews with administrators from both sites saying institutions sent out more than a dozen surveys to enrolled student populations during the academic year of the study's data collection, yet digital literacy was never an area considered, further illustrating this disconnect. I reviewed the surveys sent to students at both Harris and Greendale community colleges were not assessing technology access or digital literacy with these instruments.

I mentioned earlier in the chapter how four participants experienced an assessment about their access to technology through an online writing course at Harris Community College. The first assignment was to complete an online module designed to help the learner determine if an online course was a right fit given their computer abilities and access. I could not gain access to the module, but participants described it as a series of questions that asked about a student's Internet speed in very direct and simple ways, such as asking the student to download a .pdf file in the module and to count how long it takes to complete. Reportedly the module also asked students to complete a virtual weekly calendar, identifying times when they would have reliable access to a computer. The module also required students to open a word processor, provide a brief self-introduction, save the document, and submit for verification. While this module only assesses a particular set of digital access and literacy, it represents acknowledgement of a baseline of technological knowledge necessary for success in the course.

For many students, the lack of consideration of digital literacy was frustrating. Maureen was very competent in navigating systems after her first two semesters but said, "I don't think they care if we don't know how to do everything because there's just so many of us. They expect some dropouts, and maybe they chalk the digitally illiterate up in that count." I spoke with Rick, an IT professional who sits on committees about both retention and technology at Harris Community College about possible attrition due to technological barriers. Rick shared his expectation that students would come into college knowing how to use institutional technology:

> I think it's alright to assume that a student can use a webpage and complete forms online. That's a basic skill for anyone these days, whether they are working a job or just out of high school, these are basic skills that people just pick up. When I say it out loud I actually find myself a little worried that it might be wrong, but I certainly hope people can send emails by now.

Assumptions such as Rick's may not be that unusual, and he might be describing skills that a majority of students have, however his assumption does not reflect the other contexts associated with using technology as a student. Submitting information online via a web form represents a particular skill, while knowing how to use Microsoft Word to format a paper to the specific requirements of the Modern Language Association style guide is another more specific skill.

Jenny, the 35-year-old adult learner studying education at Greendale, was also very capable and confident with computers having spent most of her life with a computer in her home. Jenny said that she had to assist and tutor a lot of her classmates who were frustrated with the computers, especially near due dates for big assignments and during course registration. Community colleges are primarily commuter campuses, meaning the majority of their students travel to campus rather than living on or near campus, and Jenny herself would often have an

hour break between two classes in which she would talk with classmates and provide guidance with the computers. Jenny shared a story of another commuter adult learner who was having trouble with the virtual aspect of being a student:

> One classmate, Linda, and I would basically have a standing coffee date every Thursday morning between classes. Linda was probably 50 years old or so, and knew only how to do her work tasks on a computer because she had the instructions written out step by step. When it came time to submit a paper, she always had it done by Thursday so I could help her submit it correctly. And we were in the same class! Papers were never due until Sunday night, but she always had it done early so that she could have me help her submit it using my computer because she didn't have a laptop.

I asked Jenny if she thought about starting a computer tutoring service, as she was very capable with the campus technology at Greendale and she replied, "I haven't! Maybe I should. But shouldn't that be the school's job?"

The process of using technology for academic purposes represents a specific context and skill set that was rarely assessed. Some courses require software for writing papers, submitting attachments as assignments, participating in online discussions, or accessing and submitting homework (the way that platforms such as MyMathLab require students to submit math homework in very specific formatted answers), and this requirement represents a technological obstacle between the student and completion of assignments. Harris Community College student Jenny was unaware of the amount of online work required for a sociology course. After spending a semester assisting her fellow students, Jenny felt that had the instructor asked if students were aware of and prepared for the online component of class, some of her classmates may have been intimidated and dropped the course immediately. However if the course had presented

expectations and also provided an overview of how to use necessary software and platforms, such as the assessment module used in the online writing course mentioned previously, students may have felt empowered and valued.

Overall, general student digital literacy assessment might not make sense for all students because of curricular contexts within institutions. For instance Bridget, who is studying automotive technology at Harris Community College, said that her program does not define and therefore require technological ability the way the rest of Harris Community College does. Bridget's program teaches from the ground up a great deal of technology, from basic computer skills (often taught as part of a greater lesson plan or curriculum) to using advanced digital devices, such as tablets and other mobile computing devices. Automotive technology requires a great deal of digital literacy, as Bridget explained how "modern cars are all computers, which is good and bad. I have to plug a computer into the car to confirm what's wrong, and sometimes the fix is just a software update. Sometimes I don't even need my toolbox, just my [handheld digital diagnostic scanner]." For Bridget, assessing her ability to use a word processor and submit assignments to a course management system might have given her the wrong impression for technological requirements of her program.

Assumptions of Broadband Internet Access

Perhaps the most problematic institutional assumption about how adult learners use the Internet is that all students have reliable and sufficient Internet access in their homes. The assumption of broadband access is reflective of the "always online" characteristic of traditional college aged students held by institutional administrators, such as Reggie, who holds a senior academic leadership post at Harris Community College. Reggie's comment was that the institution needs to be prepared to provide access to information and services 24 hours a day,

because students are “always online, and always in need.” Despite his observation focusing primarily on what the institution needs to do in order to meet demand, he continued on to share how students should not have any excuses for missing deadlines for tuition, class registration, completing forms, because of the “always online” characteristic.

At Greendale, Emil shared a similar attitude about assumed Internet access. Emil is a network administrator for Greendale Community College, and leads a team who ensures that the wireless and wired network connections on campus are adequate and functional at all times. “Yes, we assume that all students have Internet in their homes, but as I think of it, I wonder if we make that clear that we essentially require it,” Emil said. “I work so specifically on the campus network and what we strive to achieve here, that I’ve yet to consider what happens to their connection when they leave,” he continued. Emil described that on an institutional level, he was not ever present for any discussion of access limitations off campus. At one time Greendale considered becoming an Internet service provider in the local community, but that was a commercial endeavor and not an educational one.

Many participants did have Internet access in their homes. Fifteen participants had broadband or mobile (typically 3G or 4G) Internet connections with a home wireless network, seven were still using a modest dial-up connection which used the home’s land phone line, and two had no form of Internet access in their homes. Some participants, such as Eunice at Greendale, had no Internet access at home and no plans to acquire it. “Would it be helpful? Sure. Is it worth what it will cost my budget and possibly my lifestyle? I don’t think so,” according to Eunice. Eunice was not alone in sharing concerns over the financial cost of having Internet at home. Many younger adult learners, and those who had children living at home, described Internet access as a necessity, but even then having Internet at home did not equate to having

access to the Internet. Jerome described a frustrating evening trying to watch videos for class when his home had "an Xbox playing games, three teenagers on their phones, my wife on Netflix on the TV, and probably two more laptops in the kids' rooms, all online." While broadband Internet access is present in Jerome's home, it is not necessarily reliable, as he had to watch videos from start to finishing without fast forwarding in order to advance to the next module in his class, and if the video and site generated an error, he had to refresh the page and start the video over.

The study illustrates the disconnect that exists between what is assumed of, and what is experienced by participants in terms of accessing the Internet, which as Emil shared is essentially required for student participation. Institutions are not required to provide Internet access to students, and community Internet infrastructure is not the responsibility of either community college. However, interviews with community college faculty and staff showed that institutions made policies and decisions without considering that that all students might not have the same access to information, services, and overall participation,

Adult Learners' Feelings of Marginality and Mattering

As a guiding analytical tool of the study, I sought out elements of adult learners reporting feelings of mattering to the institution, either through college processes, policies, and programs, or through interactions with individuals representing the college. I found that there were connections between the experiences of adult learners at Greendale and Harris and how the participants felt about their place at the institution. However, some of these connections between experiences and feelings may be attributed to other factors not measured in the study and influence the reported feeling of marginality and mattering. Schlossberg (1989) established the framework of marginality and mattering as a way to help answer questions such as "do we

belong? Are we central or marginal? Do others care about us and make us feel we matter?" (p. 5). Marginality and mattering helps those who study or work with campus communities understand how interactions (or the lack thereof) can influence whether or not a person becomes engaged, involved, or part of campus culture and community (Schlossberg, 1989). A distinct theme in the findings was a shift from mattering to marginalization of adult learners during the educational process. Participants shared initial feelings of mattering as they felt that Greendale or Harris had considered their needs as adult and nontraditional students. The feeling that "they've made a path for me" as Jerome had shared, expressed the sentiment that both institutions understood that adult learners needed a different experience than traditional aged students. However, as participants interacted with the institution and technological expectations of student participation, participants shared feeling as if they did not belong in college.

Study participants often felt marginalized because of distance that institutional technology creates between adult learner and institution, while reporting feelings of mattering when adult learners have their technological needs supported and addressed. Previous examples demonstrated how difficulty navigating the virtual campus made students feel lost, confused, frustrated, unconsidered, and in some cases unwanted at the institution. For some study participants, technology created a barrier between them and the institution, a distance created by digital interaction. When adult learners had positive interactions with campus, whether through, because, or in spite of technology, they described feeling encouraged and supported in their academic ambitions. David described technology as putting distance between him and the school. David said "[Technology is] like a wedge between me and campus. And in my case [a wedge] between me and the information I need." However David understood that what he needed from Greendale required technology because he liked having options for online classes,

because he did not think he would have been successful if he had to go to campus every day for a remedial math course. Similarly, Jerome did not enjoy his online courses, but he knew that he would not be able to make as much progress toward his degree without online options. When asked if technology at Harris provided him with any advantages he needed he replied "yeah, the flexible stuff. Being able to take online classes, or sometimes do something online if I can't make it to campus one day."

Participants shared stories and feelings about distance between themselves as individuals and campus, which when viewed through a theory of marginality and mattering, led me to describe adult learners as experiencing technology as the primary marginalizing factor. From the data, there is a connection between the participant experiences with technology as difficult and frustrating, including making adult learners feel unsupported in their learning of technology, and how marginalization is defined by Schlossberg (1989). Participants' stories of encountering technology as a new and unclear medium, where the objective was understood but the path and process was unclear, are illustrations of the ideas of feeling decentered from the environment, out of place. The sentiment of feeling disconnected from the institution by many participants reflects how their experiences are very different from the expectations of Harris and Greendale of connecting all students to education through technology.

While reports of marginalization were common, there were many times when participants described feeling as if they were an important student to the institution. These times often came during individual interactions with faculty and staff at the institution, but also with some aspects of institutional culture. When David described feeling overwhelmed by his course schedule, online participation expectations, and trying to get access to information such as his bill and grades, he found support in an unlikely place. Greendale had set up some open use computers

around campus in buildings without computer labs. David had some time between classes one afternoon and was trying to get information about some financial aid he was expecting. David could not remember the specific problem he was having, but he recalled feeling incredibly frustrated and "getting as hot as a piston" because of his inability to get the computer to do what he needed. A faculty member from the anthropology department heard David's audible frustration, and offered assistance, which included using her own laptop to look up information David needed. David said that the interaction took less than ten minutes, but it made him feel as if there were people at Greendale who wanted to see him do well. The biggest lesson David took away from the support was "she said that you aren't going to really be part of class if your head is still here fighting the computer." In order for David to be part of the class community, and to belong, he had to disengage from frustration and accept support.

Tension between technology and marginality and mattering manifested in specific ways for adult learners. Specifically, adult learners found the digital institutional environment difficult to navigate and succeed within. Also, study participants interpreted usage of technology to be motivated by business operations, not pedagogically driven. However, whenever adult learners had an opportunity to interact with people (including faculty, staff, and students) about how to manage and learn technology, they felt supported and more confident about how to use the digital platforms.

Navigating the Environment

The ability to successfully navigate the collegiate environment is an important consideration for student success. When the college environment migrates to digital platforms, then the ability to navigate the environment is now contextualized by an additional set of skills, specifically understanding how websites and systems are designed and organized. An interview

with Edward, a senior level information technology professional at Harris Community College echoed what other administrators had spoken of, that institutionally Harris viewed the design of their web system interfaces to be "user-friendly." When asked to define who the "user" is, Edward described someone who was used to websites designed for user participation, such as Facebook, Yahoo, and other large-scale sites. Edward described users who interpreted website design through "symbols and buttons, representations of actions which they are familiar, and who are used to the button under a textbox meaning 'send.'" It is fair to compare Harris's systems to Facebook and Yahoo as platforms, and the similarities are there from the arrangement of content, but the menus themselves are unclear and often require additional navigation in order to reach content or service I was looking for when examining systems for the study.

By observing adult learners from each institution, I was able to see and assess systems from their accessibility to the student. Harris Community College student Jimmy, a 42-year-old nursing student who was very capable at navigating various technologies, illustrated that in order to see his grades, he had to start at a login page, log in, select a transcript page, select a semester and submit that selection, select an official or unofficial transcript, submit that selection, and scroll down past a significant amount of standard information about the institution and the transcript in order to view his grades. He also had to select a link for each individual course for a grade, which populated in a new browser window or tab, and could not view them together unless he selected yet another link.

From Harris Community College participants, Jimmy was likely the most confident and competent technology user and still found the process to be cumbersome and confusing. Jimmy described how he had difficulty trying to submit his immunization paperwork, as he received multiple notices that his records were not on file, but the notices never indicated where to submit

them digitally. Jimmy showed me an email notice he had received which said "submit your immunization forms using the link on the 'holds' page on your student account." Jimmy's account did not show any holds yet he was unable to register or even pay his bill until it was rectified.

It does not seem that the student information portal used by Harris Community College is very intuitive or user friendly, despite the amount of energy invested in insuring that the design is "the best it can be" according to Edward. Edward also shared that all technology decisions include a student member on the committee, ideally to ensure that student needs are represented and understood. When asked, Edward shared that student members are almost exclusively selected from an information technology degree program at the institution. A student studying digital technology and computer systems may not be the most accurate reflection of all students and their digital literacies and competencies. Through my own experiences, and observational interviews with participants, the primary student information and course management systems at both institutions were complicated to navigate.

Eunice was a participant from Greendale who I observed because of her self-reported low confidence and knowledge with computers. Eunice was studying creative and technical writing at Greendale, and had aspirations to both write a fiction novel and find a position editing for a publisher. Eunice was very adept at using Microsoft Word to format and edit documents, but that confidence did not translate to other platforms, including the text editor software in the course management system where most of her writing courses were housed. Eunice showed me how in Microsoft Word, the order in which you arrange formatting (margins, bullets, inserting tables and images) matters. Eunice shared her frustrations with the text editor in the course management system because:

> Sometimes we have to submit our paper in the text editor directly instead of uploading an attachment, and that's actually part of the assignment, bending the editor to your whim. However, there's no support for the process, and everything I've tried doesn't get my carefully arranged paper to come through. I've had better luck when I just write the paper in the box, but I've had the page time out on me before and I lost everything. Copying and pasting carries over so much formatting that I get overwhelmed. It's just too much!

Her experience demonstrated that even though she had a strong level of digital literacy in regards to Microsoft Word, course expectations made her feel unconfident and incapable of succeeding academically.

The study indicates that institutions expected the way digital systems are designed and implemented to be successfully navigated through intuitive methods or through a basic level of digital literacy. At both Harris and Greendale, the use of cumbersome student information systems represented areas where students could experience frustration, confusion, and dissatisfaction with the institution and how their needs are being met. As the digital systems and platforms were unavoidable interactions for all students, negative experiences marginalized study participants.

The "Human" Element

Fourteen study participants said that they would often defer to calling an office, faculty member, or administrator directly in order to get information instead of going to the website or because they could not find information they were looking for online. For participants like Sheryl, a student at Harris studying business, there was value in "just talking to a person, a real live human." Very astutely Sheryl shared that she knew:

> Everyone at school wants me to do good, to learn, and grow, and graduate. If I can get someone on the phone I know they're going to help me, get me paperwork, tell me where to go or who to call. I've never gotten a bad person or a bad experience when I'm talking with another person. I can hear it in their voices that they want me to do good, and that's something I don't get when I'm reading an email or webpage.

Interaction with another person represents a connection to the institution, and for many participants this interaction is better when there is less technology involved. When asked if she had ever used a webchat function, whether video or text based, Sheryl asked "why go through all that when I can just pick up the phone?"

Another participant, Earl from Greendale Community College, shared that "sometimes even finding the phone number is tough" and that "twenty years ago there was a phone book you could take home with all the numbers." This observation demonstrated both the need to consider design and clear resources for contacting institutional offices, and how technology creates a gap between adult learners and institution through accessibility of administrators and educators. Earl and Sheryl described the dynamic of marginality and mattering through technological systems at Harris and Greendale. It is the people and stakeholders who influenced Sheryl's feelings of mattering, where direct interaction built her up and resolved her issues. For Earl, his frustration with his inability to find information he needed, and even being able to get phone numbers for offices he needed made him feel that "they just don't care that this old dog ain't learning their tricks."

Sheryl and Earl were not alone in their sentiments, with their experiences echoed by other participants at both institutions, and nearly all suggested that when they are really struggling,

showing up to an office in person is preferred, but making a phone call is also an acceptable solution. Robin, a very capable technology user studying hospitality at Harris, said:

> When it's late, or the weekend, or I'm not in a rush, the website can be great. If you know how to use the site map or the search function, you can probably find what you're looking for in 5 minutes. But sometimes you still end up lost, or confused, or even scared because you just want to get an answer to your question. So yes, I will call an office and speak to another person, sometimes student to student, and even if I get transferred once or twice, I know they're solving my problem. I work all day and take classes at night or online, so since I can't come to campus when their offices are open, knowing that they'll answer the phone is a great thing.

Even when a student feels relatively confident with her ability to use digital systems, as Robin was, there is still significance attached to the interaction with another person, and despite advances in technology including video chat, technology hasn't found a way to replicate that meaningful according study participants.

Support Mechanisms

In addition to human-to-human interaction as an opportunity for communicating to a student that she and her experiences matter, other supportive mechanisms occurred for participant at both institutions which have benefited their feelings of mattering. Supportive interactions with faculty and staff increased participants' confidence and feelings of value by the institution. However supportive mechanisms were not limited to being able to reach someone on the phone. Arnie, a 52-year-old bank teller who returned to study at Harris nearly 30 years after leaving that institution to join the army, provided an excellent example of institutional support for his technological literacy. After deciding that he wanted an associate degree for himself and

his career, Arnie started looking for classes at Harris. Arnie stumbled across workshops offered by the adult and continuing education department and saw that technology was a frequent topic. After taking three of these courses because they took place for single evenings or weekend days, Arnie realized that even though these courses were not offered to him for academic credit (something he was unclear about until he was admitted and worked with an academic advisor the next year) the skills taught in the courses seemed important. Arnie identified himself as a "low-tech" person, and observing his computer usage affirmed that he had very low digital literacy and confidence, but shared how courses on Microsoft Office and tablet computing made him at least more willing to try to learn how to utilize computers. Since beginning at Harris, Arnie has also begun using the computer at work more often even though he still prefers his calculator for all of his bank teller tasks.

Both Harris and Greendale Community Colleges feature technology topics in their adult and continuing education workshops, and phone calls to both offices illustrated that such classes are popular among older students. However, neither institution viewed what they offered as related to students enrolled in credit-earning courses, and felt their operations were separate. None of the other 23 study participants took adult and continuing education courses on technology.

Conclusion

Findings show that digital technology does influence the educational experience of adult learners at both Greendale and Harris community colleges. There are some key obstacles preventing adult learners from developing digital literacy, such as habits or attitudes from before enrolling, and that community colleges have implemented technologies which must be first learned and adjusted to in order to complete student tasks. My participants experienced

frustration and anxiety at times as they tried to break through the various digital systems between them and the college. Also, because neither Harris or Greendale offered resources for learning technology, adult learners were left on their own to learn technology.

Despite the obstacles between adult learners and digital literacy, study participants wanted to learn technology. Everyone saw value in learning technology. For some participants, learning technology was a motivation for attending college, as they enrolled in programs that included development of digital skills in the curriculum. Others wanted to learn technology because it represented a professional benefit either to their current employment or toward future ambitions. My participants were also very capable of learning technology, but typically did not find the resources or support for learning at their college.

Perhaps the lack of resources for digital learning at Greendale and Harris is because administrators at these institutions were unaware of the needs of adult learners, whether it be assumptions about computer skills, or an expectation that people would be able to learn the technology easily. An assumption that every student has the necessary resources to be a digitally connected and capable student led to the colleges setting expectations of digital literacy without acknowledging this requirement directly. I saw no evidence that either institution knew that their adult learners were not just non-traditional students, but also individuals who often did not have consistent access to the virtual aspects of campus, including a dedicated workstation where they could complete their tasks and assignments as students.

Finally, in context of the obstacles, motivations, and lack of access, adult learners were marginalized by required digital interactions with their schools. For many participants, they more technology they had to use, the further from the campus they felt. Administrators at Greendale and Harris believed that technology increased access and opportunity for adult learners, but my

participants told stories of frustration, lack of engagement, and even anger at the way that technological interactions were required. Frequently the digital systems implemented were considered cumbersome and confusing, where it was unclear what was necessary to navigate the system. The lack of clear resources for support also marginalized learners. In response, participants described their strategies for persisting toward their goals despite being marginalized by technology, such as seeking out people and avoiding technology and seeking out or creating their own resources.

In the next chapter, I will discuss the implications of these findings for research and practice. I present implications for individuals who teach and serve adult learners, and implications for community colleges to be more intentional in how they support adult learners who need technology resources. I also reflect on the contributions my study makes to the theory of marginality of mattering.

CHAPTER 5: IMPLICATIONS FOR PRACTICE AND RESEARCH

In this chapter I present a summary of the study along with conclusions drawn from findings presented in Chapter 4. Included in this chapter is a summary of the study, presentation of the research findings as they respond to the research questions, and discussion of the implications of these findings for both adult learners and for community colleges, as well as recommendations for further research and an explanation of the study's contribution to theory of adult learners and technology. Study participants were older than the traditional college age, and firmly established within the range of being digital immigrants as described by Prensky (2001a; 2001b). Exploring the technological ability and needs of adult learners broadens the understanding of how digital technologies influence their educational experiences, as well as examines whether the interaction between technology and adult learners affects feelings of marginality and mattering.

I examined community college institutions as technological environments through which adult learners had to navigate in the process of being college students. Overall, I found that adult learners are motivated students, driven by personal and professional goals to succeed academically with, and sometimes in spite of, technology. All study participants identified as wanting to learn how to better use technology, including participants who identified as being very confident and comfortable using digital technology. The findings illustrated an intersection of opportunity to address the digital literacy needs of adult learners as a support mechanism for their academic success. It is not my intent to argue for a reduction of technology at community colleges, but to encourage more thoughtful consideration of the implementation and integration of digital technologies. As I stated previously, if a community college identified that a significant number of students were not able to write well enough to submit written assignments or

communicate with institutional staff, a writing center would be a likely suggestion. As such, as the findings show that the digital literacy of adult learners was not sufficient to successfully manage all technological expectations set by Greendale and Harris community colleges.

A comprehensive review of the literature about educational technology indicated how technology provides a significant opportunity for both institutions and students, including academic flexibility and efficiency (Romano & Dellow, 2009), cost effectiveness (Bajt, 2011), improved communication (Treat, 2011b), and development of skills useful for a modern workforce (Chu & Tsai, 2009). While I did not examine or debate the potential benefits of educational technology in the study, access to and reception of educational benefits of technology relies on the learner having the digital literacy necessary to use digital systems and opportunities. A substantial amount of literature exists on the implementation and effects of digital technology in postsecondary learning environments, very little focuses on the experiences of adult learners, and I found no literature that viewed the overarching digital culture that is present in higher education.

Summary of Major Findings

The findings focus heavily on the educational experiences of adult learners with technology, centered around the digital literacy of the participants. Also significant was how digital literacy operated as a gateway to successful navigation of the digital systems and access to academic knowledge and institutional success. I used Schlossberg's (1989) marginality and mattering theory as a framework to contextualize the technological interactions between community colleges and adult learners as possible opportunities to disenfranchise or support the learner. Schlossberg, LaSalle, and Golec (1990) described marginalization of adult learners as making students feel out of place, insignificant to the environment, or overall disconnected from

the educational context. The findings themselves follow this theme of marginalization primarily, as participant stories illustrate the ways in which digital interactions, designed to increase connection with the institution, yielded disconnection between the learners and institution. However, participants, institutional administrators, and I believe that technology provides opportunity for educational attainment, if marginalization can be lessened. Every participant shared some perspective on how they felt as if the educational experience was intended for a technological savvy student who understood the systems almost intuitively, reflecting Chaves's (2006) definition of marginalization as not being the ones for whom the environment and experience was designed. However, there may be additional factors that influence whether or not an adult learner feels marginal in their learning experience, perhaps due to overall frustrations with expectations, schedule, responsibilities, and more that are not a result of technology.

Overall, study participants were frustrated with their comfort, confidence, and competence with digital technologies being assumed by the institutions, and that little to no technology support was available or communicated with them. Additionally, adult learners were motivated to learn how to better use technology, and most participants expected some learning curve when reenrolling, but found themselves without any resources to learn the technology beyond what Earl called "trial and failure." The study participants represent willing and eager learners who may lack some basic digital literacy necessary to successfully understand and use digital educational technologies, whose needs have not been assessed. When Ahmad, a senior information technology professional at Greendale stated that "if a student can apply, they can do the rest," it represents these assumptions of ability about the all students, but is especially telling of the study participants who struggled with Greendale's technological expectations.

Response to Research Questions

The study findings answer the research questions of the study, which I designed to examine the relationship between adult learners and the technology utilized at the two community college data collection sites. These research questions were:

1. How does technology influence how adult learners feel valued, welcome, and important on their community college campus?
2. Do adult learners who report higher or lower feelings of confidence and competency with technology describe higher or lower feelings of satisfaction and feeling valued/important to their institution?
3. How does the way a campus establishes/communicates its technological expectations/services/systems create a culture of assumed technological literacy? How does the digital campus culture affect the adult learner's college experience?

The findings show that technology itself often created feelings of marginality for the adult learners, from their beginnings as interested individuals, to their applications for admission, and their enrollment and activity as students. Technology, as espoused by institutional administrators, facilitated efficiency and flexibility of interactions and support for students, by expanding the boundaries of the community college beyond the brick and mortar campuses and traditional operations. However the findings illustrate that by implementing significant digital systems, both Greendale and Harris created overwhelming and cumbersome portals for adult learners, restricting access to faculty, staff, resources, and learning.

Technological influence on how adult learners feel valued, welcome, and important on their community college campus

Study participants shared their stories of being non-traditional students on increasingly digital campuses. The process and feeling of "mattering" (Schlossberg, 1989) was the conceptual frame for this question specifically, examining the possibilities for technology to increase reports of being valued, welcome, and important to the community college. While not a consistent experience across participants, within some interviews were experiences when technology represented the potential for increasing feelings of mattering. When marketing the educational experience to non-traditional students and adult learners, both Greendale and Harris presented technology as a way to increase flexibility of course options and scheduling, preparing for the workforce needs, and increased faculty and staff contact. Some participants, such as Greendale students Dave, Maureen, and Maria, and Harris students Megan, Sheryl, and Robin, remarked that having increased flexibility for course offerings made the institutions more attractive. Acknowledging that traditional class schedules during work hours on week days might not work for all students was an empowering consideration from the community colleges (Baldwin, Bensimon, Dowd, & Kleiman, 2011).

Harris and Greendale marketed their institutions as providing valuable knowledge for the modern workforce, paralleling the community college trend of selling vocational opportunities through education and training (Brooks, 2013). While the overall outcome was of workforce preparation and vocational training, gaining skills with modern technology was clearly communicated among the marketing materials at both institutions. Campus tours at Greendale and Harris included stops at computer labs, viewings of state of the art classrooms featuring touch-sensitive smartboards, and highlighted technology programs. Study participants

overwhelmingly reported wanting to learn how to better use technology as students and professionals. For instance, Yolanda felt that "teaching me how to use computers will help me get a job, and I think they get that and want me to do that." Yolanda's sentiment reflects how the institution's consideration of and commitment to the needs of their students created feelings of mattering among adult learners.

Similar to the increased flexibility for academic courses, both institutions called attention to virtual office hours with faculty and staff. The role of technology mediated faculty contact is not clear or significantly explored in the current literature, but again, the increased flexibility for campus participation increased adult learners' feelings of mattering, that whenever study participants were able to connect with faculty, through technology and face-to-face, they felt as if they were being integrated and involved in the process.

Technological implementations at Greendale and Harris provided opportunities to increase the feelings of mattering of study participants, especially when they described being marketed to by the schools. Consideration of what adult learners might need as non-traditional students was a powerful sentiment, and often played a role in the participants' decisions to enroll and their academic expectations. However these feelings of mattering did not continue once learners were within the academic context and found they lacked the necessary digital literacy to take full advantage of the opportunities. Adult learners do not feel welcome, valued, or important if they are not considered, supported, or even understood as individuals who learn technology differently. Institutions could avoid some of this disenfranchisement by acknowledging that digital literacy is a growing and changing skill set that is now required but never discussed as part of the collegiate curriculum.

Determining how technology made adult learners feel at Harris and Greendale requires some interpretation. When asked what kinds of technology they used as students, many participants did not consider the web systems on campus to be technology. They primarily viewed physical items over digital systems as technology. In these cases, when asked about institutional technology, they may not have considered having to check their email for important announcements or the ability to pay a tuition bill online as technology, filtering their understanding of how technology influenced their experience. Therefore, the benefits of online systems which increased accessibility and flexibility were not always included in participants' feelings of technology on campus. While often cumbersome and complicated for adult learners, the online systems were necessary and useful features of the college, as many participants spoke of responsibilities and schedules which made physically visiting offices and services on campus difficult. The disconnect between using institutional technologies as benefits and understanding that these features were technologies is another artifact of the limited digital literacy of my participants.

Similarly, smart phones were rarely considered computers, or technology, which were useful for education. With the exception of email, smart phones were not involved in the tools that participants used as students. Inconsistency and a lack of clarity about technology may demonstrate that any other positive interactions or benefits of technology may not be included in the opinions or feelings that participants have about their institutions. Very few participants felt that they interacted with technology while on campus, despite every building having public access computers, Wi-Fi, digital displays, classroom technologies (including projectors, and occasionally smart boards), and sometimes touchscreen information kiosks about campus. My interpretation is that when students visit campus for class or administrative reasons, they are

entering the physical environment of the campus online, despite still having access to all features of the digital campus. The only difference on campus is that the human resource element of the college became more readily available, and these interactions with individuals improved feelings of support, satisfaction, importance, and being valued. It is unclear if physically being on campus is purely symbolic to participants, or if there is something more practical occurring within the physical school environment which explains this difference.

Interesting, social media rarely came up in the interviews, and when it did, it was not included in institutional technology. A school's Facebook page was still Facebook. Some participants who reported low digital confidence still felt comfortable with social media, especially Facebook, but again they did not consider the school's presence on social media to be part of the digital systems of the university. The same might be said for email, a continual presence among student experiences, often a frustration due to the number of announcement and informational emails from the schools that participants did not feel were necessary. By trying to keep their students informed and aware, Harris and Greendale both seemed to annoy or frustrate students with email.

Overall, technology produced mixed feelings for participants, some which they were aware of, and others that they did not realize were influenced by technology. Even when participants were made to feel welcome or included on campus to various degrees with campus efforts, such as offering online classes or services, the relationship was not clearly made for all learners that the benefits they enjoyed were related to institutional intention. However, the negative interactions and effects of technology on adult learners cannot be dismissed because of participant disconnect. The sentiment that the schools did not understand the lives,

responsibilities, needs, or computer abilities of adult learners resulted in strong feelings of being unwelcome or unimportant to campus.

Technology often made participants feel alone, unconsidered, or frustrated due to their inability to use institutional web pages or systems effectively. While course management platforms were the most difficult school system encountered, overall the way that most systems were designed, updated, and required negatively influenced participant feelings of being included in campus considerations. When about how they felt about using technology in their educational experiences, participants rarely had positive feelings about technology. It was viewed as a burden or obstacles, another hurdle to be managed in pursuit of professional or academic goals.

It is important to acknowledge how technology was viewed as an unsupported requirement of the educational process, as this has been mentioned in several places in my dissertation. My finding which illustrated that technology was a medium to be learned and managed points to this observation, and suggests that the lack of support for learning technology might be more significant than the assumption and expectation that everyone should be able to use all institutional technologies effectively. Participants were willing and able to learn the systems in nearly all cases, but sometimes did not acknowledge any benefit from having learned how to adequately navigate the digital landscape. It is possible this disconnect is a product of participants having learned the technologies on their own without support from institutional sources, therefore not connecting the advantages and benefits of the technology with their feelings of importance and mattering.

Adult learners' reported digital confidence and competency with technology and feelings of satisfaction, being valued, and importance

Participants who felt more confident and competent with digital technology encountered less difficulty with the technological systems used by Greendale and Harris, while those who did not feel as confident experienced frustration, anger, and disconnection with the institution. Adult learners who were not very comfortable with using technology reported struggling with everyday tasks as college students, such as submitting assignments, finding information on the institutional website, submitting information or payment. Only five participants at Greendale and three at Harris reported feeling moderately comfortable with technology, or feeling capable enough to complete all tasks asked of them as college students. Overwhelmingly, adult learners in the study shared that they did not feel very comfortable using digital technology, for reasons such as fear of breaking the technology, lack of basic knowledge, and not understanding the way websites and portals were designed. Also, study participants shared that their confidence with technology was often lowered following a bad experience with technology, such as losing a document with or without saving, getting lost in a website and having trouble finding the homepage, or simply not being able to feel confident that they had submitted an assignment correctly on a course management system. Adult learners from both institutions shared frustrating experiences where they would enter information onto a web form, only to encounter an error after submitting, using the "back" button on the browser, and having to resubmit that information again.

A lack of confidence with computers and websites represented either lower digital literacy or additional lack of confidence in one's own digital literacy. A relationship between digital literacy and confidence has been established by Fieldhouse and Nicholas (2008), but their argument focuses on the confidence of digital natives as being confident in their ability to

navigate the internet to find and trust content. While many study participants appeared to be much more capable of using computers and systems than their reported capacity might have indicated, they still had a lower described and observed ability with computers. My study used computer confidence as a proxy for digital literacy during participant recruitment, as I did not assess the actual digital literacy of study participants. In some cases, adult learners were felt confident using very specific technologies, such as software used at work, tablets for personal use, or their own computer. Maria uses fairly advanced technology in her work in an event and in a large scale event venue, managing many digital files, calendars, and needs of her clients and vendors, but she consistently shared that she does not know how to do anything else with computers. She was also convinced that she would never be able to work for another company in a similar position because she only knows her software and computer. For her, the confidence was very limited in scope and she was convinced the skills will not translate beyond this very specific context.

David identified as having low computer confidence and ability, but described behavior that made him sound more capable than he perceived himself to be. However when he used my computer in our observational interview, he was nervous using my wireless mouse. Even though the mouse was not different in function from what he was used to, the reality that it was a different kind of mouse, not his, and did not have a wire made him nervous. He was also worried about breaking my computer because it was nicer than his. His confidence with computers was already low, and he reported it even lower using my device initially. He became more comfortable once he realized my computer operated identically, but it took time and assurances from me.

When many study participants were unable to correctly use the websites, portals, or systems, or were not sure if that had correctly utilized these technologies, their frustration and confusion manifested itself in disconnection from the institutions. The fear of failing with computers, alongside the fear of breaking technology, represented this lack of confidence and lack of understanding of digital technologies. The concern that you could actually break a website by clicking the wrong buttons may seem unfounded to someone who understands how web pages are designed and operate, but for someone who has actually broken something with physical buttons, it's seems very possible. The way that institutional technology was presented to my participants as comprehensive, required, and advantageous created anxiety due to the assumptions of ability and access paired with lower reported confidence. Basically, it was summarized well by Arnie when he said "it's like they are saying 'oh everyone knows how to do this.'"

At the institutional level, digital technology exists as a medium through which students interact with the college, whether by finding information about an office, staff, or faculty member, performing a degree audit for their academic progress, paying for hourly parking through touch-screen ticket kiosks, and more. When I asked participants if institutional technology made them feel more or less connected to the school, I heard stories about times when participants were able and required to connect through that medium with various effects. If the medium is providing flexibility for adult learners, such as flexible and online courses, or being able to submit paperwork and payment online, the interaction is positive and made participants feel as if their needs were considered. However, if the medium was interpreted as creating distance between the learner and school, it made participants feel less connected. Charles described technology as a wedge, where the increased technology made him feel

distanced from campus. Because he had to take an online remedial math course, the medium may have felt thicker to him, and his interactions were filtered more negatively. Charles did describe the barrier as "solvable" but that it was on him to manage his interaction and success through the barrier. For Charles, the barrier was unavoidable and he had to use the campus course management system without other options.

As technology mediated these interactions, adult learners encountered obstacles and difficult paths as they tried to progress through the overall academic and campus system. For some study participants, even email felt too impersonal when they were trying to resolve an issue, because of having previous experiences where emails were not received, ignored, or misunderstood. A consistent trend in the data was the decision to either avoid technology as much as possible by contacting staff and faculty directly on campus or over the phone, or to utilize other resources to navigate technology, such as asking for assistance from family, friends, classmates, and sometimes the campus help desk phone line.

The technological interactions between learner and institution did not create efficiency or flexibility in the way that Greendale and Harris intended, instead the difficulty of these interactions created distance between study participants and their objectives. I found that the study participants' lack of confidence and comfort with digital technology, as manifested through their digital literacy, increased this distance from the institution, influencing their feelings of marginalization. The primary avenue for connection as preferred by the institution, specifically through technological portals and platforms, made study participants feel as if their value to the institution was lessened, and that their abilities assumed to be greater than they were.

Campus establishment and communication of technological expectations/ services/systems as digital and technology campus culture and the effect on adult learners' experiences

Despite differences between the institutions in terms of curriculum, enrollment, and location, Greendale and Harris created campus cultures that both touted the benefits of digital technology and created an expectation of digital literacy. Physically, the campuses featured various implementations of digital technologies, such as the interactive digital touchscreen map and directory at Harris, or the video chat stations (public computers and web cameras available for connecting with faculty/staff) at Greendale. While touring the campuses on my own and with an official tour guide, the culture of technology communicated that technology made the institutions modern and capable of teaching 21st century skills. On the Harris tour, the guide took the group to a computer lab, which was mostly empty at around 1:45pm on a Tuesday. The guide remarked "we have a few labs like this one, but most everyone brings a laptop to campus" sharing that there was also an assumed culture of mobile computing access. I returned to the computer lab later that evening at approximately 7:45pm and found that nearly three quarters of the computers were occupied. This observation made me wonder as to if and how computer lab usage is assessed or tracked in determining services to provide or remove.

Virtually, the campuses also represented their digital culture in the opportunities provided through technology, both in terms of the general information which the public viewer sees, and the internal system and portals used by students. The institutions utilized social media heavily to call attention to student, faculty, and institutional achievements, and included social media buttons on nearly every page I visited. Rick, an administrator at Harris who served on a committee to review the institutional website and web presence, told me that their goal was to

make every piece of information available on the website and to let the potential students and community members that the college was "up to date" in regards to how they positioned themselves with technology. When asked about the expectations of digital literacy of the students, Rick said he was "confident Harris students know how to use webpages" and that they were "thoughtful and careful with our recent site redesign to be user friendly."

Digital culture at both campuses was telling, but strong digital culture and investment in technology does benefit schools and learners in various ways, including increased efficiency, access, and overall institutional performance (Treat 2011a; 2011b). My research identifies areas in which expectation of technological literacy and behavior creates obstacles for adult learners, but does not argue that institutions should reduce or hide their digital culture. From the findings, I saw how the way that Harris and Greendale presented their digital culture as expectation, touting the usage of modern digital opportunities, state-of-the-art educational technology, and being relevant in the preparation of a 21st century workforce. Presenting their digital culture as a requirement instead of an opportunity framed technology as something to be used, and not necessarily something to be learned. This framing shows that there is an assumed culture of technological literacy, and likely explains why there are few resources for supporting the actual learning of technology. The signage, systems, and even the information on the campus tour described a campus that is designed for the computer-savvy, digitally literate, and always connected learner.

Creating and communicating a strong and clear digital culture amplifies this assumption that students want a highly digital and technologically modern college experience. The finding that Greendale and Harris never assessed their students in regards to their digital literacy or technological needs shows that any implementation of technology is done without consideration

how the system may marginalize learners. Study participants had to utilize technology during their academic experiences as manifested through the digital campus culture at both institutions, with varying results. Overwhelmingly, my participants told stories of feeling overwhelmed by a platform or new system, frustrated by technology not working correctly (or not being used corrected by the user), or disengaged from the institution due to technological interactions being the primary or only mode of connection or communication. A digital campus culture, with expansive systems, platforms, portals, and websites to navigate, can make some adult learners feel as if they are learning at a distance regardless of the commute.

Implications for Working with Adult Learners

Adult learners are a substantial percentage of American higher education, enrolling at institutions around the country for often personal and professional reasons, typically hoping to improve their lives in some way (Pusser, et al., 2007). My study illuminates some very particular characteristics of adult learners, which affirms some existing scholarship and contributes to answering other questions about adult learners. Adult learners are highly motivated and driven students, frequently attending higher education with multiple non-traditional student dimensions, such as working full-time, caring for dependents, and ultimately not being able to have a student-first mentality. Educators and administrators working with adult learners should understand both the limitations of adult learners, and the opportunity represented in their motivations as students to become better with computers, more familiar with the process of higher education, and for their ability to create solutions and resources for their success where there previously were none.

Study participants were not as digitally literate as their institutions assumed, but that does not mean that the adult learners do not want or are unwilling to learn and improve their technological skill and confidence. While some participants were enrolled in programs where

technology was clearly embedded in the curriculum, most were studying in majors or subjects where there was an implied technological literacy requirement that was never present in the coursework or curriculum. However, all participants raised a sentiment of wanting to know how to better use computers, smart phones, tablets, and for a wide range of reasons, including academic, professional, and creative goals.

Individuals working with adult learners can leverage such motivations toward academic and professional outcomes, creating opportunities to foster these skills within the academic lesson plans and through additional resources. Classes and workshops on technology and computers are frequent in adult and continuing education departments, including Harris and Greendale's offices. However these classes often have an additional cost typically not considered for financial aid, and require an additional time commitment. As a constant variable across the study participants' experiences, the academic gateway might serve as a useful avenue to leverage adult learner motivations. Some participants experienced a module in an online writing course which assessed whether they had the necessary technology, internet access, and motivations to successfully participate in the course. Such a module could, and perhaps should, be implemented in every course that utilizes an online course management system, to take advantage of small scale student assessment. This module, and many others, can be created by individual faculty and staff and shared through course resource repositories. Beyond the initial level of assessment, tutorial modules on successful academic coursework modules should also be created for individual assessments and interventions.

Beyond course modules, individuals working with adult learners can simply integrate adult learners' motivations to learn technology into their individual interactions. Asking an adult learner "would you like me to show you how to submit that information" could be a powerful

educational interaction. Study participants created solutions for their problems by contacting faculty and staff at Harris and Greendale. Being able to have a conversation with a person through as little technology as possible was a frequent and useful resource for adult learners, and illustrates how important the human resource element at colleges remains despite the technological innovations we currently experience. When teaching my father how to use a computer, I instructed him to "double click" an icon to open an internet browser. My father moved the mouse very carefully to the icon, clicked, and then three seconds later clicked again as his "double click." In that moment I understood that the most basic level of input on a computer was a foreign concept to my father, and I had to shift to showing more than telling. Complementing my anecdotal experience are the observational interviews with adult learners where I asked them to show me how they use technology. Harris information technology student Arnie repeatedly asked me "why, do you know a better way?" when I asked him why he operated or navigated the digital systems the way he did.

Androgogical perspectives show that adult learners approach learning from problem-centered perspectives, with knowledge rooted in experiences and experiential learning (Knowles, 1980). In andragogy, the concept of self-direction is a key assumption in Knowles's (1980) to understanding and working with older students. Self-directedness represents the ability of an adult learner to both guide their own learning through maturity and motivation, however the line is often blurred with knowing at what point the direction should shift from the institution to the learner in regards to learning. As my study participants all wanted to improve with technology, only some took the initiative to learn new technologies. Most were waiting for an opportunity to be taught, and seemingly expected the learning to appear in the curriculum. The most common online courses taken by study participants were English subjects, typically composition or

creative writing. Is it the responsibility of the English department to teach digital competencies and skills in addition to core writing concepts and practices? In support of andragogical philosophies of teaching, it may also be useful to examine the implementation of pedandragogy as a teaching paradigm more reflective of learning in the digital age.

Pedandragogy is a concept I encountered during the data collection process, an effort to combine the teaching strength of pedagogy and the adult learner dimensions of andragogy, a teaching and learning theory that "maintains the self-directedness and calls for the development and creation of tools of learning that promote students' self-engagement" (Samaroo, Cooper, & Green, 2013, p. 84). Pedandragogy is a young model of teaching and learning, but it reflects an important characteristic of digital literacy as I saw it needed in my participants. As the line was blurred of when the adult learner should try on their own, and when they should receive resources from the institution, a model that usefully represented the importance of teacher facilitated learner expectations and experiences is useful. Pedandragogy focuses on the independency of the learner, but does not insist or rely upon it. For those working with adult learners, Samaroo, Cooper, and Green (2013) argue to provide opportunities for learner and empowering existing curiosity and exploration, features of digital natives which could be leveraged for adult learners in their pursuit of digital literacy.

Implications for Community Colleges

Community colleges should consider several implications for their service to adult learners based on my study, including assessing digital literacy as a predictor of student success, reflecting upon and defining campus technological expectations, and resources designed for technological support. Regarding assessment, how administrations process and integrate digital literacy into institutions will need to be a reflection of how colleges view the role of technology.

Community colleges utilize placement exams for English and mathematics in order to ensure that students do not find themselves in courses for which they are underprepared. Similarly, an assumed baseline skill set of digital literacy hinders students who are underprepared for the technological expectations of the institution. Some administrators at both Greendale and Harris shared that students only need to be able to know how to use a website, however the terms "use" and "website" themselves represent many different actions and platforms. Submitting a status update on Facebook is a much different experience from attaching a document to a forum posting in an online course management system. Reading information from a Google search is much simpler than logging into and using a library search engine for journal articles.

By reflecting upon and defining technical expectations, institutions can better prepare themselves and their faculty and staff for what a student's skill set needs to have for admission, and ultimately where it needs to be toward program/degree completion. Currently technology pervades as an invisible yet influential piece of the curriculum, as digital literacy is controlling access to and submission of information. Both Harris and Greendale have standards of literacy for their students, and utilize remedial education to ensure that they are addressing student skills gaps as much as possible and digital literacy represents a similar characteristic of academic success at modern institutions relying heavily on digital technologies. Assessment and addressing digital literacy can be influenced on both the institutional level and in smaller ways, such as support for faculty in teaching and learning resources for course management system class design, working with individual student service and access offices, and tracking computer lab usage (especially after 5 pm when many adult learners take classes).

Community colleges can also directly affect the experience and digital literacy of adult learners through supporting current resource opportunities for digital literacy, and by creating

others designed to teach technical skills. Both Greendale and Harris have invested in institutional "help desk" resources where faculty, staff, and students can contact a help line for questions about their computers. These help desks are organizationally found within information technology and offer student support for computer hardware issues and basic troubleshooting of some software. Help desks are also charged with providing technical support for technical problems. However, study participants and I found that when asked, help desk staff were willing to help with other problems, including best using or navigating institutional systems, even though they knew it was not their role to do so. This support may reflect a philosophical shift in the way that help desk services are position, whether within information technology or realigned in student services, but overall representing the focus that "help" also includes the digital campus experience and not only printer and network connectivity issues.

Similarly, both community colleges housed teaching and learning centers for faculty and staff. Review of their websites illustrated that their purposes are to increase learning and academic outcomes through supporting and improving instructional practices within the institutions through pedagogy and technology. Centers for teaching and learning could be leveraged to create, support, and share assessment and tutorial modules for courses utilizing course management systems. Also, these centers have access to faculty in a way that is conducive to measuring the digital literacy ability of both faculty member and the students in their courses, to create recommendations and programs to enhance the teaching and learning through technology for the institution.

Overall, processes such as assessing digital literacy, providing resources for the support of navigation of the institutional systems and expectations, and simply acknowledging that technology creates a separate curriculum, community colleges can improve their support of adult

learners. In my study adult learners often shared that they simply wanted to feel as if their needs were understood, and ultimately considered in the decision making process of technological implementations. Conversations with institutional staff reflect neither institution assesses the digital needs and skills of their students, illustrating that student users are not included in the design and implementation of digital technologies at the institutional level. By involving assessment, reflection, support, and consideration of adult learners in the process of technological implementations, feelings or mattering can be increased, and possibly the academic matriculation and success of adult learners can be increased.

Implications for Research

This study suggests a number of directions for future research. These questions reflect on the effect of digital literacy in higher education as:

1. What is the digital literacy of all college students in different educational contexts, including traditional aged college students?
2. Are there particular subcultures or demographic populations particularly marginalized by expectations and assumptions of digital literacy?
3. How do community colleges examine the ways in which they evaluate, select, and implement digital technologies?
4. Are adult learner motivations predictive variables of community college academic success?
5. What best practices do faculty recommend for assessing and managing digital literacy of their course participants?
6. What are the implications of digital nomadism for educational practice?

7. Does marginality and mattering actually affect academic outcomes and student success? Are adult learners motivated to succeed even when feeling marginalized by their schools?

Digital literacy is a necessary competency in higher education as the implementation of complex technological systems proliferates in community college institutions, yet the digital literacy of students and especially adult learners remains assumed and unexplored. Some scholars have argued that even the digital native age college student population is not as technologically savvy as is commonly assumed in practice (Bennet & Maton, 2010). Through scholarly research and institutional assessment, both benchmarks and knowledge can be generated on the digital competencies and needs of college students can be established and subsequently addressed through education and resources. For community colleges like Greendale and Harris, even the process of assessing the digital ability and need of their enrollments, they can make students feel valued and considered. From there, colleges can identify any literacy trends or gaps within the student body, and create interventions or support services to develop digital literacy. Designing a study that would use currently validated scales of digital literacy and students of all ages would provide a foundation for institutional assessments, as well as contribute to the ongoing digital native and digital immigrant debate.

While my study focused specifically on age, there were lingering questions concerning whether any subcultures or demographic populations are further marginalized by digital technology, especially the expectations and assumptions of digital literacy. Are some demographic samples more or less likely to not own personal computers? Are there demographic trends describing who use computer labs and are those trends representative or disproportionate of institutional enrollment? My study found some correlation that younger participants were more likely to have both personal computers and home internet access, which is consistent with

the digital generation gap discussed throughout the study. If some campus subcultures are more likely to use public computing options, they may be affected disproportionately if there are any computer lab closures or reduced accessibility. Such data could be vital in connected the need of computer and internet access, expectations of digital literacy and performance, and campus and academic outcomes.

Additional research can examine the processes community colleges consider and implement educational technologies. Based on my research and the limited research I found on the technology decision making, community colleges implement technology with little consideration or input of adult learners. While the current process, according to institutional administrators, is primarily concerned with cost and efficiency, the way institutions implement technologies should be strongly considerate and reflective of the needs of college students. Research on the decision making process would need to move beyond involving high achieving students on technology committees, and instead build off of assessment practices to decide and communicate the decision and implementation. Processes a simple as a gradebook change can affect how a student views their academic progress in a course if the change is not clearly communicated to the faculty and students, where a single setting can show a grade in proportion to the total semester (including future unsubmitted work) or the current status in relation to past assignments. Also, increased transparency would inform faculty and staff into the moving pieces which influence the decision process of technology, keeping stakeholders and participants aware of the ways in which technology is valued and utilized at institutions. Future research projects could examine the institutional processes at the committee, executive, and board level in order to determine appropriate spaces to communicate the process and strategy.

Adult learner motivations are an interesting thread of research for future scholarship, as they are rarely viewed as potentially highly motivated student populations which can be directed and leveraged toward student and institutional success. Throughout the data collection and analysis process, the reality of adult learners as motivated and driven students was salient. Of specific interest for future research is examination of these motivations as input factors into an ecological model, such as Astin's (1991) I-E-O model, and engagement theories resting on the development on intrinsic motivators as predictors of collegiate success. While realities of being a non-traditional student often supersede the academic motivations of adult learners (Horn & Carroll, 1996) understanding these variables will help inform what types of supportive mechanisms to create or support within institutional contexts, including the training of faculty and staff, and the ways that technology are used to provide opportunity and flexibility to adult learners. I suggest future research to longitudinally explore to adult learner motivations and their likelihood toward, and ultimate success.

Additionally, my study encountered faculty members who were very interested in the digital literacy of their students, and shared my sentiment that technology represented another access point with which students gain education or are further marginalized as non-traditional students. The faculty member who taught an online writing course implemented an assessment module considering the digital technology and access ability of online students, and such efforts should be researched and shared. Also, individual interventions of adult learners provide the human resource interactions of support which were celebrated among study participants, where people solved problems and improved digital literacy of participants at both Greendale and Harris. A research study on the practices of community college faculty and their methods and interventions to identify digital deficiencies and support increases in digital literacy could yield

best practices scholarship for others to integrate into their course designs, or pedagogical approaches.

The digital nomadism identified in my findings described some adult learners as highly resourceful in their usage of multiple computer workstations, but the effects of digital nomadism are currently unexamined. A study that focused on how digital nomadism affects the educational practice of institutions, individuals, or teachers may illuminate the kinds of technology support that higher education should include in digital literacy outcomes. Digital nomads would benefit from actively using cloud computing to manage their assignments, readings, password, website bookmarks, and more. However, based on my participants, not all digital nomads are confident enough using computer to effectively use or trust cloud computing. A community college which identifies that many of their students have both low digital literacy and are digital nomads might invest in resources to develop and support cloud computing needs of all students.

Finally, my study including participants' feelings of marginality and mattering to their institution through technology culture and interactions, however the design of my research was unable to connect marginality and mattering with academic outcomes. A future study would research adult learners and their feelings of marginality longitudinally, ideally early or before their enrollment, during their educational experience, and after their experience had ended whether having met their intended objectives or not. In my study, adult learners reported often feeling as if they were marginal to the institution through technology, but sometimes reporting strong feelings of mattering and valuing typically through positive interactions with faculty or staff. Despite the mixed feelings of my participants, no learner said that they were planning on quitting because of technological interactions, or because they didn't feel digitally literate enough to succeed. A study which explored this relationship and potential other factors of

student success at community colleges could illustrate which are stronger predictors of success, motivation or marginality and mattering.

Implications for the Theory of Marginality and Mattering

I used Schlossberg's (1989) theory of marginality and mattering as a conceptual framework to examine any potential technological influence on adult learners at community college, and through the stories of my participants I found that interaction with institutional technology specifically influenced strong feelings of marginality in many participants. Similar to my pilot study on adult learners and classroom social media use (Brazelton, 2013), when the educational experience is mediated by technology, adult learners shared that technology was a medium or platform that they had to conquer before being able to fully participate in their academics. Earlier I suggested that technological requirements and expectations represent a medium between the students and the institution, a barrier which is flexible, permeable, but also often an obstacle for learners. While my study was focused specifically on the interaction with the institution through technology, other factors may also influence feelings of marginality, however study participants shared direct stories and experiences of times when technology made them feel marginal to the college.

The technological medium was a filter through which experiences made adult learners feel as if they matter or are marginal to the institution. My participants shared stories of technology getting in the way of what they were trying to accomplish, whether it was simply completing course assignments, finding information online, or even having to submit records to the institution. In this way, technology made some participants feel marginal through such interaction, because they did not know how to correctly use the software and systems in order to complete the objective, at all or in a timely fashion. I asked participants to share if they felt that

the institution was considering their needs, overall and with technology. By asking this question, I heard stories of learners never being asked what they needed, and early on in the data collection, heard a telling theme that "this wasn't made for me." From here, adult learners do feel marginal, and reported being pushed to the margins by technology and their schools, because they were not the kind of student Greendale or Harris thought would be using technology.

In Schlossberg's (1989) work, marginality was presented in many conditions, sometimes as a temporary state due to a transition into a new environment, other times as a more permanent condition. Schlossberg (1989) illustrates this condition as someone who is multiracial, or someone who is an international student studying in the United States. These two conditions stand out as a possible typology for digital immigrants who are marginalized by technology. In my findings, some participants arose to the challenge of learning new technology and have found some success, reporting high confidence and ability with computers. Others are still frightened, even feeling paralyzed like Yun, by technology, and their computer confidence and behavior persists, even if I often interpreted many participants to be more digitally literate than they thought they were. In this context, the digital immigrant moniker becomes more appropriate for adult learners marginalized by technology. Some experienced marginality less, or were less affected by it, and they adapted to the new landscape through effort, resourcefulness, and strategy. Others continued to behave like a lost immigrant in another country, sharing feelings of fear and frustration, and being unable to speak the language of technology.

However, feelings of mattering did emerge as adult learners described a tension between wanting to learn technology, but not being fully open to the potential of technology. Some of this tension was due to a disconnect in learning opportunities, mainly that participants were rarely given any resources for learning technology through their colleges. By sharing that the flexible

and online class offerings were not preferable, but often needed by adult learners, participants demonstrated that the colleges were meeting some of their needs. Jerome did not like his online course experiences, but without them he would not have been able to take as many classes each semester. His goal is to graduate quickly and take as many classes as he can handle each semester. However, his schedule at work and as a father prevent him from having time to visit campus for traditional classes. Jerome acknowledged this need himself, and was happy to have the flexibility built in.

Interestingly, the way that some participants managed their technological marginalization as students created opportunities for mattering. When participants could not conquer the technology, or when they were searching for something to allow them to avoid technology completely, they would turn to the faculty and staff of their schools. Some participants told me that they would rather pick up the phone and call an office or person directly and ask their questions. And overall, these interactions with actual people at community colleges yielded positive interactions and resulted in many solved problems.

Feeling as if one matters can also represent feeling as if one is depended on (Schlossberg, 1989). While not a consistent trend in the data, Jenny's story of teaching her classmates how to use computers to complete assignments and conquer the course management system illustrates that by being able to be a resource for other nontraditional students, she encountered mattering in a different way. However, in Jenny's case, her mattering was reflective of her being needed because of a breakdown in services or opportunities with the institution, so she mattered to the marginalized. Still technology gave Jenny purpose which she had not had before, of being the one who knew and taught technology instead of being the one being taught.

Overall, interactions with campus through technology matter, and possibly significantly so. Adult learners do not have all the necessary digital skills and literacies to effectively navigate and use the many different systems implemented by institutions. During data collection I learned that Harris had transitioned into a new system which integrated most systems into a single collection requiring only one login and password. From this page students could access and submit records, use the course management system, pay their bill, check their email, and review the campus calendar for events and important dates. Harris Community College participants who were aware of this change and collection were very pleased with the implementation, and felt that it was an improvement over the multitude of sites they used before.

However this implementation, while an improvement, did not completely ameliorate feelings of marginality for participants, only made the process simpler for accessing information which removed one obstacle in their technology experience. It is possible that participants experienced marginality through other factors, perhaps due to feeling overwhelmed, stressed, or decentered from the institution because of other characteristics of being adult learners as nontraditional students. For the theory of marginality and mattering, researchers and practitioners need to understand technology plays a significant role in the collegiate experience and therefore creates many interactions from which adult learners can be marginalized, but that adult learners are already marginalized by being nontraditional students.

When Nancy Schlossberg researched and published on college student transitions, and then on how transitions lead to feelings of marginality and mattering, campuses were not digital, and therefore digital campus experiences were not included in her work. However, given the exponential increase in educational technology and student information systems, along with the decreased cost of personal computing devices, tablets, and smart phones, the technological

influence on education is everywhere. The digital medium students interact with does not exist between single layers of systems in an ecological model of the community college, but throughout all systems and interactions. In future examinations of marginality and mattering, of belonging, centrality, disengagement, or consideration, the digital expectations and requirements need to be included within the scope of how the student experience is defined. Many studies on students and digital technologies focus on very specific contexts, such as online class experiences or social media usage, but none has acknowledged that technology is embedded in all aspects of the student experience in some way. My study begins research on this broader look at student experience with campus, and shows how technology can strongly influence how students feel about their interactions with technology.

Summary

In this chapter I discussed how adult learners are currently underserved at Harris and Greendale community colleges as their digital literacies are not sufficient to successfully take utilize the institutional technologies designed to improve and positive influence their educational experiences. I also discussed the implications of my study in relation to adult education, community colleges, and future research. I argue how those who serve adult learners, including community colleges, can integrate digital literacy into student assessment at various levels and how to support the development of student digital literacies. As non-traditional students, adult learners experience additional obstacles in their educational experiences, and digital technologies place additional challenges in their academic pursuits. When these technological systems create negative interactions between institutions and students due to a lack of understanding of the digital literacy of adult learners, feelings of marginality increase. Such marginalization creates

distance between the learner and community college, leads to frustration and confusion, and ultimately devalues the adult learners the institution seeks to serve.

APPENDICES

Appendix A: Interview Protocol-Adult Learners

Name:
Age:

First I'd just like to get to know more about you as a student, especially why you're attending INSTITUTION now.

1. Why are your currently in school? What were your motivations and goals for enrolling?
2. What program/major are you studying? Why does that program/major interest you? If you don't have a particular program/major, what did you come to school to learn?
3. What did you do for employment before becoming a student? Are you still in that roll now?
4. Have you ever attended college before? What was that experience like? Did you finish your program then? If you left without finishing, what led you to leave before completing your studies?

My next set of questions are about the kinds of technology you use regularly as a student. I am curious in technology broadly, especially whenever a digital screen is involved such as smart phones, computers, touchscreens to access information, service, etc…

5. When you applied for admission here, how was that process? Did you speak with anyone like an admissions counselor beforehand? How did you speak with them, over the phone, email, in person? When you applied, did you submit a paper or electronic application? If you had questions about the school or application, where did you look or who did you ask for help? How did you connect with those resources?
6. Academically, what kinds of technology do you have to use as a student? Examples: online class forums or social media class pages, submitting assignments electronically, preparing assignments with a computer (papers, PowerPoint presentations), communicating with faculty.
7. Have you ever taken a "hybrid" (both face-to-face and online) or completely online course? If online, did the class have a set time that it took place every class session (like a face-to-face class but online), or were you expected to complete assignments and participation on your own whenever you had time?
8. How does the school communicate with you? Do you get letters in the mail, emails, or text messages/phone calls from the school? How do you prefer that they contact you?
9. Think about an average day on campus for you. From the moment you arrive on campus until you leave, what kinds of technology do you use or interact with (such as parking kiosks, computer labs, using your own computer or smart phone)

Now that I know much more about how you use technology in your life as a student, I'd like to ask you some questions about how you use technology in general.

10. In your current or previous jobs, what kind of technology did you use? If you used computers regularly, were you given training? If not, how did you learn to use the computer and software for your job?
11. How do you use technology in your personal life? Do you use computers, smart phones, tablets regularly for reasons other than school or work? What do you like or not like about technology in your personal life?

12. When did you first start using technology regularly? About how old were you at the time? Why did technology become something you used regularly?

I'm also very interested in how technology affects your experience as a student.

13. How do you feel about using technology in your educational experience? What do you like about it? What do you not like about it?
14. Does technology provide any advantages for your education that you need in order to accomplish your goals? Does it get in the way of you achieving your goals? How so?
15. Technology allows for some services to be provided through self-service, such as parking kiosks, touch-screen information stations, and websites (class registration, information, paying tuition). Do you use these services? How do you feel about these services?
16. Your school uses a lot of technology. As a student, do you like having a lot of technology both on campus and online?
17. Why do you think your school has put this technology into place? What do you think their motivations are?
18. Your school uses technology to help students connect to the institution, so do you feel connected and a part of the school?
19. Because of the way your school uses technology, do you feel that your needs are being considered? Are your needs being met?

These are all the questions I have for you at this time. Thank you for sharing your experiences with me. Would you be open to sitting down with me again sometime in the future and showing me on a computer the kind of technology you use regularly as a student?

Appendix B: Technology Usage Protocol- Adult Learners

Name:

Thanks for taking the time to meet with me again. Today I'm going to ask you some basic questions and have you go through the web pages and sites that you regularly use as a student. I'm hoping to learn how the web systems work from your perspective.

How do you normally get online? Do you use a device at home or someplace else (and where)? What kind of device do you normally use such as a desktop computer, laptop computer, tablet, or smart phone? What influences which device(s) you use and how you get online?

What sites do you go to for class? Where do you take part of class discussions online? Take me through what you do to participate in class discussion.

Where do you submit assignments? Can you show me how to submit an assignment?

Speaking of assignments, what software do you normally use to write papers, complete homework, or do other assignments?

Do you ever use social media sites like Facebook or Twitter for class? Could you take me to those sites? Show me how you participate with the class on social media.

Whenever you need information about the school, where do you go? Let's say you need to talk with an academic advisor, how do you find that person's information? What about information on financial aid, or your tuition bill?

Where do you have your primary email? Do you use the school provided email address and system or do you use another one? Can you show me what the email interface looks like?

What are some other services you've used online? Maybe signing up for a parking permit or paying a parking ticket? Maybe career services, a writing center, or other class help?

When you need to do research for an assignment, where do you search for information? Do you ever use the library website? If yes, could you show me how and what you use it for? If not, why don't you use it? Have you ever sought out help for gathering research for an assignment? What was that like?

If you're having trouble working with technology, such as finding information, getting an online form to work, or difficulty completing an assignment, where do you go for help? Can you show me how you find that information?

Are there any other reasons you need to get online as a student? What are those, and where do you go? Are there particular web sites or pages that you frequent?

Thank you again for your time. I think this is all I need. Thanks for showing me how you use these web sites and pages in your college experience.

Appendix C: Interview Protocol- Faculty and Staff

Name:
Position:
Years at Institution:

Thank you for taking some time to meet with me. I'm hoping to learn more about the way that technology is implemented at the institution and the motivations behind implementing the technology. I also would like to learn about the how students are supported in learning and navigating the various technologies and systems in place at the institution

1. Could you tell me a little more about your role here at the institution? What relationship do you have with the decision making process that decides what technology to use and implement?
2. When considering a new technology (student information system, course management system, institutional support of a social media platform), what considerations are typically brought up?
3. What is the decision making process in reference to technological decisions? This can range from software, services, and physical changes including infrastructure and computer labs.
4. When you imagine a typical student at your institution, how do you think they use technology? How do they use it as a student and in their personal lives?
5. Has the institution assessed student's ability to use technology? If yes, what has that assessment revealed? If no, are there resources in place to help students learn how to use the technology?
6. Overall, are students expected to be able to use and navigate technology at the institution prior to enrolling? Are there support services available to help students learn the technology?
7. Has the institution assessed internet access of the students? If yes, what has that assessment revealed? If no, what assumptions are made about the internet access of the students enrolled at the institution?
8. How does the institution view online courses? Approximately what percentage of the total courses available are offered online? Is this percentage higher or lower from recent years? Do you anticipate the percentage to increase or decrease over the next several years? Why?

Thank you, those are all the questions I have at this time.

Appendix D: Observation Protocol

Foreshadowed Questions

What are the purposes of the technologies?
How are technologies made available?
How are technologies communicated?
How do students interact with technologies?
Do student-technology interactions match up against the intended purposes of the technologies?

Type of Technology	Intended User	Notes

Observer's Reflections

Appendix E: Study Participant Solicitation Survey

Name:
College:
Best phone number to reach you:

Demographic Information

- What is your gender: (Male, Female, Transgender)
- What is your age? (24 and under; 25-34; 35-44; 45-54; 55-64; 65-75; 75 and older)
- What is your ethnicity/race? (African-American; American Indian or Alaskan Native; Asian or Pacific Islander; Caucasian/White; Hispanic; Other, Prefer not to respond)
- What is your academic program/major: (FILL IN)
- What is your current class load: (Number of credits)
- Is your enrollment status part-time or full-time:
- How many years have you been enrolled in current major/program: (less than 1 year, 1 year, 2 years, 3 years, 4 years, 5 years, more than 5 years)
- Employment: (Full-time; part time; unemployed but seeking employment; unemployed and not seeking employment; retired;)

Technology Access

- Do you have a personal computer in your home in working condition? (Yes, No)
- If yes, is this computer connected to the internet? (Yes, No, I don't know)
- If yes, is this computer a desktop (large computer that is not portable) or a laptop (portable)? (Desktop, Laptop, I don't know)
- What, if any, is your primary access to a computer with internet? (at home, at work, at you community college, at a friend/relative's residence, local library)
- Do you have an internet connected cell phone (sometimes called a smart phone, such as an iPhone or Android brand)? (Yes, No, I don't know)
- Do you have a tablet computer (such as an iPad, Kindle Fire, or Android brand) that can connect to the internet? (Yes, No, I don't know)

Digital Ability

- On a scale of 1-10, with 1 meaning "does not describe me at all," 5 meaning "no opinion/neutral," and 10 meaning "describes me very well," please respond to the following statement.
    - I feel very comfortable using a laptop or desktop computer
    - I feel very comfortable using a tablet computer (iPad, Kindle Fire, etc.)
    - I feel very comfortable using word processor software (Microsoft Word, Pages for Mac)
    - If something is wrong with my computer, I do not try to fix it and find someone else to do it.
    - I feel very confident using a laptop or desktop computer
    - I feel very confident using a tablet computer (iPad, Kindle Fire, etc.)

- I feel very confident using word processor software (Microsoft Word, Pages for Mac)

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