Online Learning Readiness Among International Students

Brandon McLeod

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ONLINE LEARNING READINESS AMONG INTERNATIONAL STUDENTS

DISSERTATION

A Dissertation
presented in partial fulfillment of requirements
for the degree of Doctor of Philosophy
in the Department of Higher Education
The University of Mississippi

by

BRANDON S. MCLEOD

May 2022
The United States holds a commanding 22% of the market share of international students, more than double that of the second leading country (United Kingdom). The number of international students studying at U.S. institutions has had a steady incline for decades and these students now make up approximately 5% of all higher education students in the U.S. Even still, there have been previous examinations of international students’ perceptions of online learning readiness.

As online and blended learning elements are an integral part of nearly every degree program, and, indeed, nearly every course, it is imperative that we gain a better understanding of what international students perceive to be important, how confident they view themselves on those same items, if there is a difference between what they perceive as important and their confidence, and the effect of demographic factors on these perceptions. This study examines these questions through the Student Readiness for Online Learning instrument developed by Martin et al. (2020) across four subscales: online student attributes, time management, technological competency, and communication competency. Data were gathered from currently enrolled residential international students at U.S. institutions. There were 117 valid respondents.

Descriptive statistics, repeated measures ANOVAs, and correlation matrices were used
to address the research questions. Data analysis revealed that the average student viewed all four subscales as being between somewhat to very important and themselves as being somewhat to very confident. Demographic variables did not interact with the dependent variables, though there were correlations for GDP per capita ppp and internet users % per capita.

This study shed much needed light on the perceptions of international students online learning readiness. Results indicate the need for further study as well as the development of more comprehensive assessments.
DEDICATION

This dissertation is dedicated to my supportive and loving spouse and daughter, without whom I would have never made it this far. You are my everything.
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I wish to express deep appreciation and gratitude for my chair, Dr. Melear, and for the members of my committee, Drs. Webb, Hutchens, and Balkin, for their guidance and support on this long journey. I wish to also give special acknowledgement to Dr. Bentley, my advisor for the graduate minor in applied statistics, and Dr. McClellan, who invited me to write with him, as his equal, and has served as a mentor and friend. Of course, thanks are also due to the many other professors who have guided and supported me on this path. My gratitude also goes out to my Director, Jean Robinson, who has supported my endeavors all these years.

My heartfelt thanks goes out to my spouse, Tressa, for her enduring love and encouragement. There are not words enough to express how profoundly impactful her constant championing of my endeavors has been. Her support throughout the many changes and challenges we have faced is without compare.

To all others of have supported me in my journey, but have not been named, you have not been forgotten and you will forever have my deepest thanks.
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CHAPTER I
INTRODUCTION

In 2004, Zhang et al. pondered if e-learning could replace classroom learning. As the United States and other countries continue to feel the effects of the COVID-19 pandemic, the structure of higher education has undergone significant changes as it adjusts to social distancing requirements, and other measures, while trying to meet the educational needs of the students. In the spring semester of 2020, universities around the world shifted to online education for the majority of their students, most of them for the first time (J. Lau et al., 2020). Online learning, though it has been around for decades in different forms (Rosenberg, 2001), has never been implemented on such a grand scale. While some research shows that online learning students perform equally as well as (and sometimes better than) face-to-face students (Selim, 2005), research also indicates that students must be ready in order to achieve these outcomes (Lemmens, 2010 citing Byrd & MacDonald, 2005; Conley, 2007).

The question then becomes: How prepared are our students for online learning? There have been considerable studies on online learning readiness with various populations in a wide array of educational and professional situations (Hashim & Tasir,
2014). And, while some (Adams et al., 2018; Selim, 2005) have looked at diverse populations, an exhaustive review of the literature revealed that none have examined online learning readiness among a diverse group of international students within the United States. The U.S.A. commands 22% of the market share of international students, more than double the second country (UK) in 2018 (NAFSA, 2020). As such, this is a critical area of understanding in normal times. Since the advent of the COVID-19 pandemic in the U.S. in early 2020, colleges and universities have had to rapidly shift to online learning through online coursework for the vast majority of students. This dramatic shift in the mode of instruction is, perhaps, the largest change in U.S. higher education since such major events as integration and the Servicemen’s Readjustment Act of 1944 (often referred to as the G.I. Bill), the tuition benefits of which led to approximately 6.6 million service members enrolling in higher education by 1950 (Breedin, 1972 as cited by Radford, A. W., 2009). It is crucial to gain a better understanding of whether or not students are prepared for online learning and in which areas they will need additional support. Given how technology, and access to technology, have advanced, it is easy to assume that most students (both domestic and international) are ready for an online learning environment, even one that is fully online. This dissertation utilized the Student Readiness for Online Learning developed by Martin and colleagues (2020) to explore whether or not that assumption holds across demographics and four subscales: online student attributes; time management
competency; technical competency; and communication competency. The present study examined both the students’ readiness according to the subscales and their perceived importance of each subscale. This chapter examines the gap in the literature, my research questions, the theoretical framework on which the study will be analyzed, and the significance of the study.

**Statement of the Problem**

Online learning, as described by Xu and Jaggars (2014), “has the potential to be a democratizing force in higher education” (p. 634). It allows courses to be more responsive and adapt to student needs, foster collaboration, include students who would otherwise not have access or not who would not fully participate in a face-to-face environment, and make coursework more interactive and engaging. While these are all very good things, online learning is not a panacea. If students are not ready to engage in online learning, then, at best, learning is diminished or, at worst, a student is so discouraged they discontinue their studies. Universities should be engaging in a systematic and thoughtful assessment of student learning readiness prior to students’ enrollment in coursework. As elements of online learning are nearly ubiquitous in all university courses, this type of assessment should be conducted early in students’ academic path so that appropriate support can be provided both individually and programmatically.
As a group in U.S. higher education, international students have been neglected in studies of online learning readiness. Though this group represents a diverse population with specific socio-cultural moderating variables, they also face many of the same challenges when it comes to education in the U.S. In regards to online learning, international students are limited externally by the U.S. government. F-1 students (the visa type of most international students) may only count 3 online credit hours towards full-time enrollment. Though they may take additional online coursework, they must also have a sufficient number of face-to-face credit hours to reach full-time enrollment. At least, this was the case until March 2020, when special guidance was released by SEVP/ICE, the governmental department that oversees F-1 students, allowing them to take only online courses, according to university policies responding to COVID-19. Additionally, in order to diminish the potentially considerable loss in tuition due to international students being unable to travel to the U.S., many universities, for the first time, sought to enroll students online while they were still in their home countries. These changes led to an unprecedented enrollment of international students in online learning and there have been no examinations of their learning readiness. Because universities are unaware of these students’ needs, they are unable to adequately address them. This study will provide valuable insight into the types of online learning readiness issues that international students in the U.S. are facing and which need to be addressed by their universities. The issue at hand is that prior to this study, universities
had no empirical evidence that their international students are ready for online learning, in what areas they find themselves to be deficient, and in what areas they deem to be important.

A Note on Modality

While it is certainly true that emergency remote teaching is not the same as online learning (Hodges et al., 2020), for both students and instructors, there are similarities and to those not well acquainted with the different pedagogical approaches between online and face to face learning, and, indeed, even within online learning modalities itself, they appear to be congruous. It certainly would have been better, and lessened the gulf between emergency remote teaching and online learning, if universities had been more proactive about announcing instructional plans more quickly, rather than, as it appeared to many faculty and students, waiting until the choice was made for them by the coronavirus pandemic. Online learning is complex. Means and colleagues (2014) identified nine moderating variables for online learning design: modality, pacing, student-instructor ratio, pedagogy, instructor role online, student role online, online communication synchrony, source of feedback, and role of online assessments (as adapted by Hodges et al., 2020). The issues which plagued the 2020-2021 school year in regards to online learning are present still as universities grapple with the new coronavirus variants and have, in some cases, returned to emergency remote teaching after a return to traditional learning, rather than proceeding
with a remote learning plan in place with the appropriate supports. As for international students, the learning situation is now more institution dependent. Students attending universities which have returned to face-to-face instruction are bound by the pre-COVID regulations regarding online hours. Students at universities who are continuing with remote or hybrid learning are eligible to take as many online courses as they wish. Of course, for those students who are in face-to-face classrooms, most of them will actually be participating in blended learning—where face-to-face instruction is coupled with online learning elements (discussed later). For those students engaging in blended learning, the challenges, as noted in the review of the literature, mirror those in fully online classrooms.

**Research Questions**

The research questions for this study are:

1. What competencies do international students at U.S. universities consider important for their readiness for online learning?

2. What are international students’ perceptions of their confidence in their readiness for online learning?

3. Is there a discrepancy in what students perceive as important and what they perceive themselves confident in?

4. What demographic characteristics correlate to student perception of competency importance?
5. What demographic characteristics correlate to confidence in online learning readiness?

**Theoretical Framework**

Hussin and colleagues described “learning as a process whereby a learner is expected to achieve an intended learning outcome within a given time frame” (2012, p. 277). Mirroring the abundance of learning theories for traditional instruction, online learning has not had a single comprehensive learning theory emerge as dominant (A. Picciano, 2019). In the previous century, pedagogy focused on building stocks of knowledge and cognitive skills that could be deployed later in appropriate situations. This approach to education worked well in a relatively stable, slowly changing world in which careers typically lasted a lifetime. But the twenty-first century is quite different. The world is evolving at an increasing pace. (Brown & Adler, 2008, p. 30)

Picciano asserted that the fourth wave of online education began circa 2014 and is a reconciliation of the blended (second wave) and MOOC (third wave) models. This fourth wave is characterized by the use of “a variety of pedagogical approaches using multiple content forms and instructional tools” (2019, p. 22). He noted, this fourth wave includes a social aspect, which was missing from the third wave.

Online learning theoretical frameworks are rooted in the earlier learning theories such as behaviorism, social constructivism, communities of practice, and information
processing learning theory. “Behaviorism led to the development of taxonomies of learning because it emphasized the study and evaluation of multiple steps in the learning process” (p. 27). Two of the most influential taxonomies were Bloom’s (1956) and Gagné’s (1977). Bloom’s influential taxonomy is rooted in six components: creating, evaluating, analyzing, applying, understanding, and remembering. Gagné, building on Bloom, developed nine Events of Instruction: gain attention, describe the goal, stimulate prior knowledge, present the material to be learned, provide guidance for learning, elicit performance, provide feedback, assess performance, enhance retention and transfer. While both taxonomies have the objective of improving teaching and learning, Bloom’s taxonomy is more focused on the learning process and Gagné’s focused more on the teaching process. Overall, behaviorism has a strict focus on observable behavior.

Looking at learning from a different perspective, constructivism, rooted in John Dewey’s (1916) Democracy and Education, viewed learning as an active process wherein new knowledge is constructed (hence the name) on previous knowledge. It is both a social activity and personal, in that teaching and learning is an act of negotiating meaning and, as each learner has a distinct perspective, the same material may result in different, subjective, interpretations. The two most prominent branches of constructivism are cognitive constructivism, based on Jean Piaget’s (1952) The Origins of Intelligence in Children, and social constructivism, based on Vygotsky’s (1978) Mind in Society: The Development of Higher Psychological Processes. Piaget viewed learning as a
series of four stages that change as one ages. Vygotsky, who was part of the school of Activity Theory (pioneered by Rubinstein and later adapted and championed by Leontiev (see Dafermos & Marvakis, 2011 and; Mironenko, 2013, respectively), viewed learning as a “zone of proximal development in which the teacher...provides a social environment in which the learner can assemble or construct with others the knowledge necessary to solve the problem” (A. Picciano, 2019, p. 29). For a more in depth look at Dewey and Vygotsky’s work, seek the work of Popkwitz (1998). Nfor, citing Koh and colleagues (2014) as well as Koohang et al. (2009) asserted that connectivism is the most common framework in studies of online learning (and related terms) (p. 11).

Picciano noted a variety of theories and models that have grown out of these two major schools of thought, citing communities of practice (Wenger and Lave, 1991; and Wenger, 1998), information processing learning theory (Atkinson and Shiffrin, 1968), multiple intelligences (Gardner 1983), and andragogy (Knowles et al., 1998) (pp. 31-32). Puzziferro and Shelton (2009) noted that while constructivism and the theories and models built on it has fit well with web 2.0 online learning, as Personalized Learning Environments (p. 13) become more prevalent, we must “look beyond constructivism...[as] the next generation of online learning will undoubtedly be more connectivist, self-directed, active, and personalized” (p 12).

Connectivism “is a theory driven by the dynamic of information flow” (Siemens, 2004 as cited by A. Picciano, 2019, p. 33). Siemens, who developed the theory based on
the work of Barabasi (2002) and Stephenson (1998) regarding networks (A. Picciano, 2019, p. 32), described learning in connectivism as

a process that occurs within nebulous environments of shifting core elements—
not necessarily under the control of the individual. Learning (defined as
actionable knowledge) can reside outside of ourselves (within an organization or
a database), is focused on connecting specialized information sets, and the
connections that enable us to learn are more important than our current state of
knowing. (Siemens, 2004, p. 5)

Siemens, a major contributor to the growth of Massive Online Courses (MOOCs) (A. Picciano, 2019, p. 32), developed eight principles of connectivism:

1. Learning and knowledge rests in diversity of opinions.
2. Learning is a process of connecting specialized nodes or information sources.
3. Learning may reside in non-human appliances.
4. Capacity to know more is more critical than what is currently known
5. Nurturing and maintaining connections is needed to facilitate continual learning.
6. Ability to see connections between fields, ideas, and concepts is a core skill.
7. Currency (accurate, up-to-date knowledge) is the intent of all connectivist
   learning activities.
8. Decision-making is itself a learning process. Choosing what to learn and the
   meaning of incoming information is seen through the lens of a shifting reality.
While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision (Siemens, 2004, p. 5).

While Picciano stated that connectivism is “suited for large-scale instruction” (2019, p. 34), Kop and Hill contested, “it does not seem that connectivism’s contributions to the new paradigm warrant it being treated as a separate learning theory in and of its own right...however, [it plays] an important role in the development and emergence of new pedagogies” (2008, p. 11). Picciano also described Online Collaborative Learning, which “focuses on collaborative learning, knowledge building, and Internet use as a means to reshape formal, non-formal, and informal education” (Harasim, 2012, p. 81), as better suited than connectivism for “smaller instructional environments,” but that it does not “scale-up” well (A. Picciano, 2019, p. 34). Magen-Nagar and Shonfeld (2018) also pointed out that cultural diversity can lead to additional challenges and even confrontations between group members within OCL environments (p. 4).

Given these disconnects, there have been attempts to develop comprehensive online learning theories. One theory, from the computer science discipline, is the 3P Learning Model (Chatti et al., 2010). It is described as “the convergence of lifelong, informal, and personalized learning within a social context. Personalization, Participation, and Knowledge-Pull build the cornerstones of this model” (p. 74). The authors noted that for a technology enhanced learning (TEL) model to endure, it must address five “critical” factors:
1. Learning is personal and self-directed.

2. Learning is social.

3. Learning is open.

4. Learning is emergent.

5. Learning is driven by knowledge-pull. (pp. 74-75).

Figure 1: The 3P Learning Model (Chatti et al., 2010, p. 75)

This model incorporates the connectivist perspective through what Chatti, Jarke, and Specht called Learning as a Network (LaaN), which is described as a “learner-centered, open, and emergent” approach to learning in which learners develop a personal knowledge network (PKN) over time and “beyond the constraints of formal educational and organizational environments” (p. 80). Chatti and colleagues contrast the PKN with
Lave and Wenger’s communities of practice (Lave & Wenger, 1991; Wenger, 1998), which they described as having a “start-nourish-die life cycle”, whereas PKNs, center the individual and are not constrained to a particular community (Chatti et al., 2010, p. 80). The 3P model focuses heavily on how Web 2.0 technologies can be used to enhance learning. Chatti, Schroeder, and Jarke later expanded on LaaN and introduced it as a new learning theory “characterized by the convergence of knowledge management and technology enhanced learning” (Chatti et al., 2012, p. 177). One shortcoming of what Chatti and colleagues described as learning management system (LMS) driven TEL methods is that “learning is regarded as a process limited by the duration of the semester or term. As Mott and Wiley (2009) put it: ‘at the end of each semester, courses are routinely “deleted” and the learners’ networks are gone’” (Chatti et al., 2012, p. 180). LaaN focuses on the development of a personal learning environment (PLE), which they describe as a “self-defined collection of services, tools, and devices that help learners build their PKNs. A PLE suggests the freeform use of...tools and services that belong to and are controlled by individual learners” (p. 188). With this theory, Chatti and colleagues wished to decentralize the learning process by providing “the learner with a plethora of different services and hand over control to her to select, use, and remix the services the way she deems fit” (p. 188). While this approach does align with some prominent learning theories, it does not align well with the structure of the modern university.
Another attempt at a comprehensive model was introduced by Anderson and called the Online Learning Model (2008). This model also built on the concept of knowledge networks (Dron, 2007 as cited by Anderson, 2008, p. 62) and described this as “the wisdom of crowds” (p. 62). It was developed by first examining attributes of learning (learner-centered, knowledge-centered, assessment-centered, and community-centered (predominantly Bransford et al., 1999, McPeck, 2000, Bransford et al., 1999, and Vygotsky, 2000, respectively, as cited by Anderson, 2008, pp. 46–52)). Then it looked at educational media, which it defined by interaction and independence of time and distance. From this, Anderson determined that web-based learning comprised of video conference, audio conferencing, computer conferencing, radio, television, correspondence, and computer assisted instruction (Anderson, 2008, p. 57). Once the educational media was established, they looked at the ways in which students, teachers, and content interact (i.e. student-student, student-teacher, student-content, teacher-teacher, teacher-content, and content-content–this last one, is described as “the group itself is an educational resource with characteristics that are different than the bounded interaction among two or more learners registered in a course” and includes interactions with services such as Google Answers and Myspace (Anderson, 2008, p. 60 citing Dron, 2007). The only educational media they left out of the model, and the biggest reason why this model cannot stand as a comprehensive model for online learning, is face to face interaction. This is due to the fact that online learning is most
frequently accompanied by a face-to-face element. When they occur together, you
cannot isolate online learning from face-to-face learning. They must be examined
together. The final model can be seen in Figure 2.

Figure 2: Anderson’s Model of Online Learning (Anderson, 2008, p. 61)
The final attempt at a unified theory of online learning that I will examine, and the lens through which this dissertation is analyzed, is the Multimodal Model for Online Education (A. Picciano, 2017, 2019). It was first developed as a Blending with Purpose Multimodal Model (A. Picciano, 2009), which focused on “six pedagogical objectives for which to consider blending modalities: content, student social and emotional support, dialectic/questioning activities, reflection, collaboration, and synthesis/evaluation/assessment” (Graham et al., 2013). This model “recommends that pedagogical objectives and activities should drive the approaches that faculty use in instruction” (A. Picciano, 2009).

Figure 3: Blending with Purpose: The Multimodal Model (A. Picciano, 2009, p. 11)
Picciano expanded on this model in 2017 in his article “Theories and Frameworks for Online Education: Seeking and Integrated Model.” The Multimodal Model for Online Education (see Figure 4) incorporates components from other theories and models (A. Picciano, 2017, p. 181). Indeed, it increased the number of components from six, in the Blending with Purpose Multimodal Model, to seven—adding in self-paced/independent study—and situating these components within a learning community that emphasizes interaction (A. Picciano, 2017, pp. 181–182). Picciano noted the importance of a learning community (A. Picciano, 2017, p. 182 citing Garrison et al., 2000, and Wenger and Lave, 1991, as well as 2019, p. 39) and the critical role of interaction within that community (A. Picciano, 2017, p. 178 citing Anderson, 2011, pp. 61-62). Like the model this was based upon, the Multimodal Model for Online Education is an adaptable framework, in which the approaches to instruction are driven by pedagogical objectives. In other words, it can be applied to distance education courses (see Figure 5), teacher-led fully online courses (see Figure 6), blended courses (see Figure 7), etc. (A. Picciano, 2017, pp. 183–186). While online learning is frequently lumped into distance education, most in-person “traditional” courses now require online learning elements such as discussion board posting, video and audio resources, and other flipped-classroom resources that require more self-directed learning techniques, access to technical hardware, and telecommunications technology than a fully in-person “traditional” course. Wladis and
Samuels (2016) noted that “a majority of students now take at least one college course online” (p. 39).

As most courses already, including those which are face-to-face, have at least some elements of online learning, developing an integrated model from an established blended learning model is the logical progression (A. Picciano, 2017, p. 187). “It is likely that, in the not-too-distant future, all courses and programs will have some online learning components, as suggested in this integrated model” (A. Picciano, 2017, p. 187). It is precisely because of the adaptability of this model and the direction instructional method is heading that this model was chosen in conjunction with Rollnick, Mason, and Butler’s (1999; see section on Perception and Readiness) conceptual framework for student readiness for online learning (as adapted by Martin et al., 2020) as the lens for examining the dimensions of student readiness for online learning identified within the survey instrument (Küsel et al., 2020; Martin et al., 2020).
Figure 4: Multimodal Model for Online Education (A. Picciano, 2017, p. 182)

Figure 5: Example of a Distance Education Course (A. Picciano, 2017, p. 183)
Figure 6: Example of a Teacher-Led Fully Online Course (A. Picciano, 2017, p. 185)

Figure 7: Example of a Mainstream Blended Course (A. Picciano, 2017, p. 186)
Significance of the study

Due to the COVID-19 pandemic and necessary measures to help curb the spread of the virus, international students, along with domestic students, were thrust into online learning at an unprecedented rate. Moreover, typical university coursework now includes online learning components, even for face-to-face courses. While there have been numerous studies on the online learning readiness among U.S. students, and online learning readiness has been identified by many universities as an important factor to consider prior to any online coursework, there were no previous studies examining student perceptions and online learning readiness for international students at U.S. universities. This study expands the literature on online learning readiness as well as on international students in the U.S. Moreover, it provides valuable insights into the areas in which universities can provide support to international students who will be enrolling in courses that are fully online or have blended learning components.

Why Is Online Learning Readiness Important

Joosten and Cusatis (2020) noted that “students who enroll online courses have varying levels of readiness and preparedness that likely influence their success (grade, course completion) (pp. 180 - 181). As one would expect with diminished readiness, Xu and Jaggars (2014) found significant performance gaps between face-to-face students and online students, with online students showing reduced persistence and grades in comparison. These gaps existed in all examined majors except mass communication,
health and physical education, and education. Haverila (2011) found a significant positive correlation between prior e-learning experience and perceived learning outcomes. In Boeglin and Campbell’s (2002) study of a psychology course that utilized web-based materials and activities to supplement the teaching found that the majority of students felt the online learning materials supported their learning, but many of the students did not feel comfortable with materials that were not didactic (especially video conferencing with their peers). Similarly, Horzum and colleagues, in their study of students using online learning programs at Sakarya University, found that “63% of the perceived learning variable is explained by online learning readiness, 9% of it is explained by academic motivation, and 88% of academic motivation variance explained by online learning readiness” (Horzum et al., 2015, p. 767). Horzum and colleagues noted that their findings are consistent with Boeglin and Campbell (2002) as well as Haverilla (2010 and 2011) in that they showed “increasing online learning readiness and academic motivation increase the perceived learning level” (2015, p. 766). “In a nutshell...students need to have online readiness to benefit from online learning settings” (Küsel et al., 2020, p. 3).

Perception and Readiness

In Bernard and colleagues’ development of a questionnaire to predict online learning achievement, which they defined as course grade, they found one’s beliefs about online learning to be a significant positive predictor (2004). Joosten and Cusatis
Similarly found online learning efficacy to be a significant predictor of learning, satisfaction, and performance for underrepresented students. In fact, it was the only predictor which influenced all student outcomes they examined. These findings demonstrated the importance of perception when looking at online learning readiness. Wei and Chou (2020) also, citing research from Alzahrani and O’Toole (2017), Joyce and Kirakowski (2015), and Wei and Chou (2019), noted that “students’ attitudes toward computers are important to their future use of such technology in instructional settings” (p. 2). Though Wei and Chou (2020) did not find a significant direct correlation between online learning perceptions and online learning performance, they did find that students with higher and positive online learning perception were “more confident and were readier to participate in online courses” (pp. 13-14). Küsel and colleagues, citing Bandura’s self-efficacy theory, stated that the success of online learning depends on “personal beliefs which are the best indicator of why a given person behaves, acts and makes decisions in a certain way” (2020, p. 2). Martin et al., in the development of the Student Readiness for Online Learning (SROL) questionnaire (which this study utilizes as its instrument) rooted the framework of the perception of the importance of and confidence in particular abilities and the relationship between them and readiness in the work of Rollnick, Mason, and Butler (Martin et al., 2020, p. 44; Rollnick et al., 1999, pp. 20–23). While Rollnick and colleagues described this connection within a behavioral health context, the application to the student learning context also builds on the works
of Bandura (1986, 1997), Koballa, Gräber, and Coleman (2000), Hewson and Kerb (1993), Pajares (1992), and Markic and Eilks (2012) (as cited by Küsel et al., 2020). The conceptual framework developed by Rollnick and colleagues, and adapted by Martin et al., is presented in Figure 8.

![Figure 8: Conceptual Framework for Student Readiness for Online Learning, as adapted by Martin, Stamper, and Flowers (Martin et al., 2020, p. 44).](image)

**Limitations**

There are two main limitations to the present study. The first is that the survey instrument does not address certain technological factors, such as physical hardware, connectivity, requisite software, data security, and the flexibility of the system (Al-araibi et al., 2016, p. 516). This limitation is most pronounced for students who are from the U.S. (see the section on the Digital Divide). For international students, who are typically
in F-1 status, this is less of an issue as these students are required to show sufficient funding in order to enroll in programs within the U.S. For instance, at the University of Mississippi, incoming F-1 students are required to provide evidence of at least $43,595.00 USD for the 2021-2022 academic year (Cost of study, n.d.). This estimate includes tuition, fees, housing, meals, books, and health insurance. At such a cost, it is reasonable to assume that the majority of international students will have access to requisite technology, especially considering the technology requirements of many programs (addressed in the Digital Divide section).

The other main limitation deals with issues inherent to self-reporting. One of these is confidence. OECD data showed that, apart from those in the Netherlands and Italy, wealthier students (those who are part of a higher socio-economic status) reported more self-confidence in their abilities (OECD, 2019). Lower confidence can lead to hesitancy “to engage in learning or take appropriate academic growth risks” (Students experiencing, 2021). Some studies have found some students to be overconfident and that those who “obtain very low scores on a test tend to be more overconfident than those with high scores” (Lee and Stankov, 2015). That being noted, “there is very little evidence that raising self-esteem leads to tangible positive outcomes” (Kremer, 2013). So, the question still remains as to whether or not confidence is a significant indicator of international student success. This question is beyond the scope of this study, but is worthy of examination. Another issue that must be noted is the reliability of self-
reporting. Recent research by Ejeh and Maina (2019), however, found no significant difference between “self-reported data and factual data [from both cumulative GPA and core courses]”, when examining undergraduate architecture students in Nigeria (p. 440). So, while these limitations do exist, the researcher does not believe that they render this study invalid or, even, significantly diminish the results.

Conclusion

This chapter has presented an introduction to online learning readiness, the gap in the literature, the theoretical framework of the present study, the significance of the study, and limitations of the current study. The current literature on perception and online learning readiness has a gap for international students within the U.S. This study, which uses the Student Readiness for Online Learning (Martin et al., 2020), addresses that gap viewed from the lens of the Multimodal Model for Online Education (A. Picciano, 2017, 2019). Chapter two will present a review of the literature on online learning and assessments for addressing online learning readiness.
CHAPTER 2

LITERATURE REVIEW

Before delving into the discussion of the development of online learning, we must first clearly identify what it is. There are a variety of similar names and definitions within the literature (e.g., e-learning, mobile learning, digital learning, etc.), and while these are often used interchangeably, there are some distinguishing characteristics between the terms and shifts in usage over time (see Figure 9). Additionally, much of the literature refers to online learning as a component of, or the current stage of, distance education. While online certainly is, in many situations, the foundation of modern distance education, the application of online is not limited to distance education programs. These related terms and concepts, however, will appear throughout this work when citing the literature. For this work, I generally use the term online learning, which is both accurate and in line with current trends (see Figure 9).
Figure 9: Comparison of term frequency in English via Google Ngrams (Michel et al., 2011).

As can be seen in Figure 9, the terms “online learning” and “online education” have been rising steadily in usage since around 1996. “E-learning”, which took off around 1999 has been in decline for nearly a decade. “Mobile learning” and “m-learning”, which started gaining traction after the advent of the iPhone in 2007 is still not as common in the literature and is more limited in scope than online learning, which can include mobile learning elements. When collapsing the various terms (online learning, online education, mobile learning, m-learning, e-learning, and digital learning), there is a clear decline in the use of distance learning/education in the literature that roughly mirrors the rise in these related terms of the digital revolution (also referred to as the third industrial revolution). The search terms utilized for Figure 9 were thus: “(distance learning + distance education), (online learning + online education), e-learning, (blended learning + blended education), (mobile learning + [m-learning])”. I should note, too, that digital learning is not represented in Figure 1 due to
the limitation on characters in Google Books Ngram Viewer, but for reference, the combined terms “mobile learning” and “m-learning” occurred about 1.25 times as frequently in the literature as the combined terms “digital learning” and “digital education”. “Blended learning” and “blended education”, as a combined term, which is what an increasing number of courses would be considered, is used only slightly more than the combined “mobile learning” and “m-learning”. As these digital learning/education terms are related, there will be significant overlap in the literature, especially between the terms e-learning (the clear favorite prior to the last decade) and online learning. Indeed, Selim noted, “E-learning has been viewed as synonymous with web-based learning (WBL), Internet-based training (IBT), advanced distributed learning (ADL), web-based instruction (WBI), online learning (OL) and open/Flexible learning (OFL)” (2005, p. 397). In this section, I will present a brief history of online learning, including how it is defined within the literature and its movement from distance education and into the main classroom.

What is Online Learning?

Keegan (2002), in regard to evolutions in information and communication technologies (ICTs), described that the transition from “distance learning (d-Learning), to electronic learning (e-Learning), to mobile learning (m-Learning) ...corresponds to the ‘societal evolution’ from the Industrial Revolution, to the Electronic Revolution of 1980s, to the Mobile Revolution at the close of the 21st Century” (Fozdar & Kumar,
Clark and Mayer (2016) “defined e-learning as instruction delivered on a digital device that is intended to support learning” (p. 7). They went on to state that these devices “range from desktop or laptop computers to tablets or smart phones, but the instructional goal is to support individual learning or organizational performance goals” (p. 7). While this definition is beneficial in its simplicity, it focused simply on the device itself and neglects the type of learning possibilities made available by web 2.0 (e.g., user generated content such as blogs; tagging; web apps; and responsive content) and the incoming developments of web 3.0 (e.g., artificial intelligence (AI)). Rosenberg’s (2001) criteria offered significantly more detail,

E-Learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. It is based on three fundamental criteria:

1. E-Learning is networked, which makes it capable of instant updating, storage/retrieval, distribution and sharing of instruction or information.

2. It is delivered to the end-user via a computer using standard Internet technology.

3. It focuses on the broadest view of learning—learning solutions that go beyond the traditional paradigms of training. (pp. 28 - 29)

Though this definition is substantially better than those previously mentioned, it came about prior to the use of mobile technology and, largely, Web 2.0 and does not
adequately address those as possibilities. Adams and colleagues (2018), building on Al-Busaidi (2013), stated, “E-learning is defined as the delivery of learning using purely Internet and digital technology” (p. 229). Ali (2016), citing Siritongthaworn and colleagues (2006), describes online education as an “innovative approach to education delivery via electronic forms of information that enhance the learner’s knowledge and skills” (p. 1). They continued, noting “other researchers define it as using modern Information and Communications Technology (ICT) to deliver instruction, information, and learning content” (citing Selim, 2007, p. 1). These definitions used by Adams et al. and Ali are sufficiently broad, as they build on the established concept of ICTs, which incorporates both the use of devices and learning mediums accessed by those devices.

With those definitions of online learning in mind, we must then look at what it means to be ready for online learning. The Online Reporting Specialists (2005) defined it as “the state or quality of being ready for electronic learning” (as cited by Pingle, 2011, p. 156). Pingle’s (2011) own operational definition was “the prompt willingness and mental preparedness...in accepting learning factors...like IT skills, collaborative learning, independent learning, and reflection of learning” (p. 158). A more comprehensive view came from Dray and colleagues, “Readiness, as expressed by these instruments, encompasses self-concept/self-efficacy with academics, information, technology, and locus of control and equipment owned (e.g., computers)” (p. 31). For the present study, online learning readiness would encompass online student attributes
(e.g., disciplined/self-regulated, academic self-efficacy, motivation, independence, etc.),
time management competency (e.g., ability to keep up with assignments, time

differences, synchronous/asynchronous, etc.), technical competency (e.g., computer

skills, prior experience, internet efficacy, etc.), and communication competency (e.g.,
writing skills, comfort with online learning, etc.).

The Path to Online Learning

The path to online learning has been lengthy and filled with both success and

failure. The idea of an education that went beyond books goes back as far as Thomas

Edison, who claimed that textbooks, and perhaps teachers, would become obsolete and

replaced by film (Rosenberg, 2001, p. 20). Of course, in the more than a century that has

passed since his prediction, that has not happened, though there have been some moves

in that direction. The U.S. Military has been a pioneer in many ways, being an early

adopter of films, and, later in the 1960s, computer-based trainings [CBT] (i.e., “teaching

machines” and “programmed texts”) (Clark & Mayer, 2016; Rosenberg, 2001). Tele-

learning, though millions were invested by universities, were a flop, being, largely,

boring and quite costly (Rosenberg, 2001). Moreover, with the rapid technological

innovations, CBT never really flourished (Rosenberg, 2001). As Clark and Mayer put it,

Each new wave of instructional delivery technology...spawned optimistic
predictions of massive improvements in learning.... Yet after more than sixty

years of research attempting to demonstrate that the latest media options are
better, the outcomes fail to support the superiority of any single delivery medium over another. (2016, p. 12)

Indeed, Rosenberg, citing Prusik (1997), described it as “cycles of failure” (2001, p. 24) in which a technology is developed and prematurely adopted, wherein they are not able to support the learning outcomes expected. Rather than working to improve on this new technology, institutions revert back to traditional methods until the next new technological fad comes along (p. 24). But these innovations, despite some setbacks, are still evidence of progress, especially in terms of distance education.

Davis (2006) attested, “Distance learning is not a fad, but instead appears to be a driving force for the future of education” (Davis, 2004 as cited by Davis, 2006, p. 1). Citing Horton (2000), Davis noted that correspondence courses date back at least to the 1800, including one offered by Sir Isaac Pitman in 1840 teaching shorthand (p. 2). And by 1883, a “Correspondence University” was founded in New York (p. 2). In many ways, online learning is the natural progression of distance learning. Indeed, it has had its share of foibles including the failure of for-profit NYUonline (Carlson & Carnevale, 2001). Jack Wilson, CEO of UMassOnline posits that “Online-learning companies are misguided if they think that high-quality content alone will attract customers. Students want a degree program, a community of peers and alumni, and a reputable institution’s name on their diplomas and résumés” (Carlson & Carnevale, 2001). Carlson and Carnevale also noted that though NYUonline failed, non-profit programs flourished.
“Swenson and Myer (2008) predicted that ‘online and blended delivery education will continue to grow exponentially to meet their [non-traditional students’] needs’” (Davis, 2006, p. 3). Gotthardt lauded online learning as a way of creating a “competitive environment [for] students and teachers to be more creative and innovating” (as cited by Rohayani et al., 2015, p. 231).

In 2003, Hofmann declared that “the use of online learning has gone beyond a trend to become an accepted and permanent part of the learning mix. It’s hard to find a subject that isn’t in some form and at some level taught online” (para 6, as cited by Davis, 2006, p. 1). Though more than fifteen years have passed since Hofmann’s remark, Wei and Chou (2020) described online learning as “one of the fastest growing trends in educational uses of technologies (p. 1). I would argue that online learning has both transitioned from a trend to a mainstay, and the ways in which it is utilized is still subject to the trend-like nature of higher education adoption of technology. For instance, the meteoric rise of Zoom for both administrative and instructional use during the COVID-19 pandemic. While a plethora of established well-known platforms already existed (e.g., Skype, Google Hangouts, Adobe Connect, etc.) and many were already incorporated into the curriculum (e.g., Blackboard Collaborate), Zoom suddenly grabbed hold of the market and shows little sign of being fully abandoned in the near future, even as universities transition back to more face-to-face learning. Even before the COVID-19 pandemic, institutions were offering more and more courses online,
opening up those courses to more students (Wei & Chou, 2020), and incorporating more online learning aspects into traditional courses. “The past decade has seen the world of tertiary education evolve with the rapid development in internet technologies, and revolution in computer softwares” (Adams et al., 2018, p. 228 citing Tayebi Nik & Puteh, 2012). Additionally, as Wladis and Samuels pointed out, “Online learning is rapidly becoming a significant component of higher education in the United States, with online enrollments increasing much faster than higher education enrollments more generally” (2016, p. 40). It’s not just the students, administrators are also keenly interested in online education as part of institutions’ long-term strategy (Davis, 2006). This is likely, in part, due to online education being highly cost-effective (after the initial investment) (Appana, 2008). It is also, certainly, in part due to the overarching technological trends both in and outside of education, where connectivity and digital interactivity are paramount. This movement has led to nearly all courses being digital in some way. Ventura described this as a transition from a “Brick School (online walls and buildings) giving way to the Brick-and-Click School” (2015, p. 1).

Pingle (2011) noted, “E-learning can take the form of courses as well as modules and smaller learning objects. E-learning may incorporate synchronous or asynchronous access and may be distributed geographically with varied limits of time” (p. 30). Moreover, students like the “flexibility and convenience of being able to work in their own time and location without the need to travel” (Ali, 2016, p. 1). As colleges and
universities have transitioned distance learning to being online and incorporated online learning into the curriculum, the need for understanding online learning readiness has not been forgotten. Many institutions, such as DuPage, UCLA, and Loyola utilize online learning readiness questionnaires for students to self-assess (Dray et al., 2011). The University of Mississippi (along with many other universities such as University of Missouri, Rutgers, University of Central Arkansas, University of North Carolina, and Nassau Community Colleges) uses the Online Readiness Questionnaire developed by Vicki Williams and Pennsylvania State University. Of course, the presence of a self-assessment does not necessarily indicate that it is using its resources to address deficits in student readiness for online learning. Additionally, these self-assessments may not be as useful as they first appear. Wladis and Samuels (2016) found some of the characteristics measured by twelve instruments were no better at predicting student success in an online course in comparison to a face-to-face course.

Before moving forward with the examination of online learning readiness, it is important to discuss the rise of mobile learning and its current and near future potential in higher education.

**What About Mobile Learning?**

Hussin and colleagues (2012) noted that smart phones (as well as tablets, such as the iPad) have both communication and computational abilities, allowing for the creation of documents and opening a variety of files accessed through the internet (p.
The mobility coupled with the computational abilities lead the researchers to declare that the “learning process is no longer limited to the four walls of the classroom or the internet environment” (p. 277). Fozdar and Kumar (2007), citing Attewell (2005) noted some advantages to mobile learning: improving literacy and numeric skills, allows for both independent and collaborative learning, aids students in identifying their needs, overcomes the digital divide, makes learning informal, helps learners focus for longer, and raises self-esteem and self-confidence (p. 4). Though these are described as “inherent” to mobile learning, there is thoughtful criticism of most of these points. The one this study will take most issue with is the one regarding the digital divide. Napoli and Obar (2014) described those who only use smartphones or tablets as a “mobile underclass” (as cited by van Deursen & van Dijk, 2019, p. 357). There are significant disadvantages to mobile learning, which will be discussed in further detail in the section on the second-level digital divide. Mobile learning, though some studies (such as Jacob & Issac, 2014) have shown that students perceive subjects as more interesting and learning more effective when utilizing mobile devices, has not really taken hold at the post-secondary level. Typical university activities—such as writing papers, conducting research, and giving presentations—are not conducive to mobile devices. Online learning, in general, however, has grown rapidly and has seen significant integration into the university classroom.
Assessing Online Learning Readiness

So, are students ready for online learning? Rosenberg (2001) certainly thought so, claiming that there’s “no user ‘ramp up time’” that “with so many millions of people already on the Web and comfortable with browser technology, learning to access elearning is quickly becoming a nonissue” (p. 30). Of course, twenty years later we can see that barriers to online learning readiness persist and will continue to exist as technology continues to develop. Indeed, as Whiteside and Dikkers stated, “Though online and blended learning is only decades old, its rise at postsecondary institutions necessitates new pedagogies and instructional practices” (2008, p. 11). Hashim and Tasir (2014) noted that e-learning has both corporate and education interests. Indeed, in their examination of 12 papers from 2004 to 2013, they found studies on e-learning readiness in a wide array of education and professional settings. For higher education, it is especially important because in addition to the typical skills needed to succeed in the classroom, online learning requires additional proficiencies including the ability to communicate remotely (often in writing, but sometimes through video or audio conferencing software) with instructors and peers, remote collaboration, time management (especially in regards to asynchronous courses), and, most obviously, the ability to access and use adequate technological resources (Zheng, 2020). Indeed, as Ali (2016) noted, assessment of online learning readiness prior to the start of online learning is essential, “since an individual learner’s success in an online course often depend [sic]
on this foundation of readiness” (p. 2). Hashim and Tasir defined this readiness as “the capability of...users in using a new learning environment as well as the usage of alternative technology” (2014, p. 267).

The first online learning readiness assessment was developed by Warner and colleagues and found that seventy percent of vocational education and training students lacked the “disposition and skill readiness” for online learning (1998, p. 4). The skills and dispositions identified were literacy and numeracy skills, technological skills, study skills and habits, motivation and learning-self-concept (pp. 48-50). Much has changed since 1998, especially in regards to the saturation of computers in the primary and secondary classroom, and numerous other online learning readiness assessments have been developed to identify and solidify the skills and dispositions needed for online learning success (Wei & Chou, 2020, p. 4), though factors can still be inconsistent across measures (Pingle, 2011; Rohayani et al., 2015). Davis (2006) wrote that it is “unknown if agreement exists among stakeholder groups concerning what characteristics, traits, and skills constitute a properly prepared online student” (p. 12). They continued to note that without the knowledge of which characteristics, traits, and skills are necessary for success in an online learning environment, “development of an online readiness tool...is effectively impossible” (p. 12). Of course, there have been a significant number of studies since Davis’s statement and while there is still disagreement across measures on what should be examined, there are, somewhat,
broad categories that have emerged as ones that are critical to understanding online learning readiness. A further discussion of different readiness assessments and the factors examined will be presented later in this chapter. The survey instrument for this study, which will be explored in depth later, examines competencies in communication, time management, and technical skills in addition to online student attributes.

**Issues Related to Online Learning Readiness**

Clark and Mayer (2016) outlined some of the ways in which e-learning can go awry: too much of a good thing, not enough of a good thing, losing sight of the goal, and discovery learning (pp. 18-19). Looking at some of the issues related to online learning is complicated by what has been dubbed the completion paradox. Students tend to fail or drop online courses more frequently than traditional face-to-face courses. Despite this, the students who completed some early online courses had a significantly higher likelihood of degree completion, as seen in Shea and Bidjerano’s national study on community college students (2014). Dray and colleagues noted similar results from Carr (2000), Moody (2004), Phipps & Merisotis (1999), and Willging and Johnson (2004) (Dray et al., 2011, p. 30). It is worth noting, too, that Bernadr et al. (2014), Northey et al. (2015), Ryan et al. (2016), Southard et al. (2015), and González-Gómez et al. (2016) all found students in blended learning environments performed better than those in traditional learning environments (as cited by Adams et al., 2018, pp. 229–230). As universities grow closer to being exclusively blended learning, those kinds of results are
heartening. The same cannot be said of exclusively online learning environments where Xu and Jaggars (2014) found that all types of students performed more poorly in online courses than they did in face-to-face courses (hereafter, we use the term online performance gap to refer to this difference). Males, younger students, Black students, and students with lower prior GPAs had wider online performance gaps than their peers. Moreover, when student subgroups differed in terms of their face-to-face course outcomes (e.g., White students outperformed ethnic minority students), these differences tended to be exacerbated in online courses. (p. 637)

There are additional issues that can complicate online learning that have nothing to do with the student. Zhang and colleagues (2004) pointed out that inadequate systems “can result in frustration, confusion, and reduced learner interest” (p. 76). Selim (2005) found “the most critical indicators [of critical success factors for online learning acceptance as perceived by university students] were instructor’s attitude towards interactive learning and teaching via e-learning technologies” (p. 409). This acceptance by the students is crucial, since, as Hussin and colleagues (2012) pointed out “effective learning [can] happen only when the learner decides to engage [themself] actively and cognitively in the learning activities” (p. 277).
**Digital Divide**

While this study assumes access to requisite technology, it is important to examine the digital divide. With online learning, there has been a shift in cost from the university to the student. Previously with face-to-face learning, apart from textbooks and basic supplies, the infrastructure required for learning was provided by the university. As we shift to blended and online learning environments, the resources that students need in order to fully participate in higher education extend beyond the physical campus. Students need adequate computing technology as well as stable and high-speed internet. This is especially problematic as approximately 30.5% of the U.S. population does not have broadband internet (roughly 101 million people) and 14.5 million people in the US (roughly 4.4% of the population) do not even have access to fixed broadband at threshold speeds (25 Mbps download and 3 Mbps upload as defined by the FCC) *(Fourteenth Broadband Deployment Report, 2021)*. This number has improved considerably in recent years (those without access to fixed broadband at threshold speeds decreased from 10.1% in 2015 and those without fixed broadband decreased from 51.9% in the same time period). Unfortunately, those in rural areas still struggle to gain access to high-speed internet, with approximately 17.3% of the rural population without access to the benchmark speed (p. 24). The deployment is even worse in tribal lands. Additionally, even if they do gain access to this benchmark speed, it may not be enough. University recommendations and requirements for internet speed vary widely.
and are often not clear. Some, such as Kent State University, University of Louisville, and University of Wisconsin-Madison, give vague guidance that you must have “reliable access to WiFi and internet” (Student Technology Requirements, n.d.) or “high-speed connection to the internet” (Technology Requirements, n.d.-a). Others are more specific, such as Harvard Medical School, which recommends 4Mbps upload and download (Hardware Requirements, n.d.), the University of Mississippi, which requires 1.5Mbps download and 600kbps upload (Computer Recommendations, n.d.), and Purdue Global, which requires 8Mbps upload and download (Technology Requirements, n.d.-b).

It is worth noting that the Purdue requirement is 167% faster than what the FCC considers the benchmark for high-speed internet in the US. In comparison to other OECD countries, the US ranks 32nd out of the 36 countries that reported internet access, using the latest data available (Internet Access, 2021). The discrepancy between the OECD report and US report should be noted. The OECD report showed access significantly lower than the US report (79.9% rather than 97.8%), and it includes non-broadband dial-up internet. These issues with access are exacerbated in most other countries. For instance, Mutambik and colleagues’ (2018) qualitative inquiry into the e-learning readiness among students in Saudi Arabia revealed that participants’ e-learning readiness suffered from a lack of access to up-to-date sufficient quality technology, cost, and internet speed. International students coming from less developed countries, may need more initial support to compensate for this historical digital divide.
According to van Dijk, the term “digital divide” originally revolved around physical access (i.e., “having a personal computer and Internet connection” (2005, Chapter 1, para. 1)). Many believed that the “trickle-down principle” was solving the digital divide and problems of access and that “those who did not gain access did not really want it or need it. In the United States, the Bush administration canceled many federal funds that had been dedicated to new media infrastructure and skills development in the Clinton years” (2005, Chapter 1, para. 3). Of course, the evidence in the latest Broadband Deployment Report paints an entirely different picture. The market, thirty years later, still has not solved the problem of access (though it has improved). Indeed, van Dijk predicted this, when he stated:

according to the trickle-down principle, present technologies such as a personal computer and an Internet connection will soon be available to all because they are getting cheaper and easier to use by the day. Such reasoning seems dynamic, but actually it is static, because one forgets that the technology is changing fast and that the people who adopted it first do not stop to obtain new technologies. As soon as the laggers have caught up, the forerunners have already moved further ahead and are using a more advanced technology. (van Dijk, 2005, Chapters 2, Priorities of Future Research section, para. 4)

The truth of van Dijk’s prediction is evidenced too by the latest Broadband Deployment Report’s acknowledgement that many have called for the 25/3 Mbps download/upload
speeds standard to be increased due to greater access to broadband (note that it is access, not adoption) and “increased demand for data-intensive services such as...distance learning...and video conferencing” (Fourteenth Broadband Deployment Report, 2021, p. 7). The report declined to change the standard and stated, among other reasons, that, even with COVID increases in video conferencing, 25/3 Mbps is “generally sufficient to enable such applications” (2021, p. 7). Of course, as noted previously, for online learning applications, this standard may not be sufficient for participation. We should remember, too, that nearly ⅓ of those in the US do not have broadband at benchmark speeds, even when they have “access”. For tribal lands, the percentage of those without broadband at benchmark speeds increases to 63.5% (p. 31). Of course, the majority of international students are not attending tribal colleges and universities. Anecdotally, when I first came to the university, I was unable to locate affordable housing within the city center and ended up approximately seven miles from campus (i.e., outside the city limits by about 3 miles). I was unable to obtain access to fixed broadband service at all. At that time, I was enrolled in a fully online graduate program at another university and had to rely on the University of Mississippi Library’s resources in order to continue in my degree program. The University of Mississippi may or may not be considered rural depending on who you ask. While IPEDS includes the University of Mississippi on its list of over 500 rural institutions, the Broadband Deployment Report uses the Census classification that includes “Urban Area Clusters”,

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which includes locations such as Oxford, MS, with a population around 20,000, as urban (meaning it is part of the over 95% of urban areas with access to broadband). So, while universities themselves are likely considered urban—by census data, the areas surrounding the university may not be. As van Dijk pointed out, these issues with access are exacerbated for those with disabilities, parents with small children, low-income households, etc. van Dijk described their theory of the digital divide as a set of statements that are somewhat self-reinforcing in nature:

1. Categorical inequalities in society produce an unequal distribution of resources.
2. An unequal distribution of resources causes unequal access to digital technologies.
3. Unequal access to digital technologies also depends on the characteristics of these technologies.
4. Unequal access to digital technologies brings about unequal participation in society.
5. Unequal participation in society reinforces categorical inequalities and unequal distributions of resources. (van Dijk, 2005, Chapters 2, The Core Argument section, para. 4)

van Dijk viewed the digital divide as something which continually changes as “advances in technology in technology, changes in economy, society, and education affect individuals” (Dray et al., 2011, p. 42). van Dijk proposed a framework that views
access as a process containing four stages of access that adjust with every new innovation: motivational, material, skills, and usage (van Dijk, 2006, pp. 223–230).

In 2019 van Dijk and van Deursen reexamined the digital divide, as the “diffusion of the Internet has reached as high as 95% in several countries...[it] has become a basic utility for social inclusion” (van Deursen & van Dijk, 2019, p. 354). They transitioned the conversation from access (first-level digital divide) to Internet skills and usage (second-level digital divide) as well as the outcomes of Internet use and tangible benefits (third-level digital divide) (p. 355). While they noted that first-level digital divide still deserved study and recognition, as access issues still exist, second and third-level divides have developed as a result of “rapidly changing technology, the large variety of devices available to the general public, and the reality that not all of the materials provide the same online opportunities (p. 355). They pointed out that the “most observed personal categories affecting Internet access are gender, age, and ethnicity” (p. 359).

**Faculty Buy-in**

“The major limitation to developing online courses is the experience and knowledge of the instructor” (Appana, 2008, p. 13). It is no secret that a significant percentage of university faculty have little to no training in pedagogy or andragogy. This lack of training can be exacerbated by the additional technical and pedagogical knowledge required for developing and maintaining a healthy and productive blended
or online learning environment (Appana, 2008, p. 13 citing Knight & Berlant 2002).

Bawa (2016) noted that “many times, face-to-face faculty are invited to teach or design online courses, with minimal or zero exposure to the pedagogical aspects of online environments” (p. 8). In their review of research into online teaching, Tallent-Runnels and colleagues’ stated:

overwhelming evidence has shown that learning in an online environment can be as effective as that in traditional classrooms. Second, students’ learning in the online environment is affected by the quality of online instruction. Not surprisingly, students in well designed and well-implemented online courses learned significantly more, and more effectively, than those in online courses where teaching and learning activities were not carefully planned and where the delivery and accessibility were impeded by technology problems. This finding challenges online instructors to design their courses in accordance with sound educational theories. (2006, p. 116)

Clark and Mayer noted the benefits of blended learning, citing a 2010 U.S. Department of Education report describing “significant learning advantage[s]...compared to either pure classroom-based or pure online learning” (Clark & Mayer, 2016, p. 14). Lopez-Perez and colleagues (2011) substantiated this in their research, finding that students preferred “online learning as a complement to [not a replacement for] traditional modes of classroom teaching” (as cited by Adams et al., 2018, p. 232). Bawa stated that one of
the challenges is that faculty fall “prey to their inherent prejudice against the perceived lack of value of online classes versus face-to-face ones” (2016, p. 8). Given these student preferences and the advantages of blended learning, the training, aptitude, and attitude of faculty are crucial to student success.

Persistence

Zheng noted “online students are expected to come...with certain skill sets such as basic computer skills, time management, self-discipline, and self-efficacy. However, there exists a gap...between students and instructors... [this can cause] frustration [leading to] resistance or even dropout” (Zheng, 2020, p. 14). Bawa’s review of retention in online courses pointed out that online courses “have a 10% to 20% higher failed retention rate than traditional classroom environments” (Herbert, 2006, as cited by Bawa, 2016, p. 1). Bawa described some critical factors that lead to high attrition rates in online environments: misconceptions relating to cognitive load, social and family factors, motivation, technological constraints, and inadequacy of faculty training, technological competency, and understanding of online learners (2016, pp. 3–7).

The most commonly cited model for explaining student retention is the one given by Tinto (1975). According to Tinto’s model, the process of withdrawal depends on how students interact with the social and academic environment of the institution. [Open Distance Learning] researchers, however, tend to avoid more traditional concepts of ‘social integration’ and instead place more emphasis
on external environmental factors such as the students’ occupation and family (Kember, 1995). Indeed, unlike students enrolled in traditional bricks-and-mortar educational institutions, students studying in ODL systems are typically adult part-time learners, juggling their studies with full-time jobs and family responsibilities (McGivney, 2004). (Fozdar & Kumar, 2007, p. 6)

Anecdotally, approximately 12% of all F-1 students affiliated with the University of Mississippi have at least one dependent (as of August 29, 2021, according to internal data). While that certainly is not the majority, it should not be disregarded. Moreover, there are additional social barriers that international students face that may affect persistence. “Rendon emphasized that nontraditional students may experience invalidation from friends and family, which may discourage their willingness to pursue academic goals” (Zheng, 2020, p. 51). Zheng continued, “Falcone included Rendon’s theory of validation and explored recognition, respect, and involved students’ cultures, communities, and families as important aspects in his own model, which strongly associated with an individual’s decision to persist (Falcone, 2011)” (p. 51). Roddy et al. noting the importance of sense of belonging, described it as a potential buffer to attrition (2017, p. 5). Wladis and Samuels pointed out that “negative survey feedback” from poorly designed online readiness surveys may discourage students from enrolling in courses where they could succeed, and, possibly decrease “student momentum in college and thereby inhibiting college persistence and degree attainment” (2016, p. 40).
Roddy and colleagues attested that “providing orientation services, especially for online students, is essential in order to adequately integrate incoming cohorts… [and these] programs [have consistently shown to improve] student retention and academic performance both on- and off-campus” (Roddy et al., 2017, p. 6).

**Preparedness Programs**

Students struggle to adapt from the traditional learning environment (Adams et al., 2018 citing Sanchez-Gordon & Lukan-Mora, 2014) and may lack computer literacy skills and motivation (Adams et al., 2018 citing Garrison and Anderson, 2003)). Zheng (2020) found that an online preparedness program correlated with an increase in student GPA by 0.4 points over time (p. 94). Additionally, the longitudinal study found that course success rate increased by 7% after the first semester of implementation of the preparedness program. Moreover, the average course success rate from Fall 2012 (the start of the study) to Spring 2015 (the final semester prior to implementation of the e-Learning Introduction (ELI) program) was approximately 60.67% and had a decreasing trajectory. After implementation of the program, the average course success rate (from Fall 2015 through Fall 2018) was approximately 64.71%, with the final semester having a success rate of 66% (which was greater than any previous semester going back to Fall 2012). Xu and Jaggars conducted a longitudinal study over five academic years that examined more than 40,000 degree-seeking community college students taking 500,000 online and face to face courses. The results indicated that all
students performed more poorly in online courses than in face-to-face ones (Xu & Jaggars, 2014, p. 637). The researchers asserted that students “may need additional support or scaffolding in order to build” the self-directed learning skills required to succeed in an online environment (2014, pp. 634–635). Joosten and Cusatis noted “studies indicate that instructors can implement specific practices to help students assess or understand their online readiness” (2020, p. 181). Horzum and colleagues stated “support and educational services can be offered to increase the motivations of students with low academic motivation so that their online-learning readiness level can increase” (2015, p. 767). While many institutions, as mentioned previously, have begun using self-evaluations to assess online learning readiness (Davis, 2006, pp. 4–5), Wladis and Samuels noted that “community colleges across the United States are wasting valuable resources administering invalid instruments” (2016, p. 40). Of course, this applies to the many universities that have implemented these same assessments that have not been validated.

**Summary**

Selim included instructor characteristics as a critical success factor for student success in an e-learning environment. As noted in the Faculty Buy-in section, that is highly context dependent and would require a separate study that would include many of the same competencies as the present study, but additional ones that address specific tasks within the faculty’s LMS as well as scales regarding teaching experience and
training (both general and e-learning specific). Additionally, Selim included university support of e-learning activities (Selim, 2005, p. 409; see also Mutambik et al., 2018) as a critical success factor for e-learning. It is worth noting too that Mutambik and colleagues (2018) also identified that “family support help[s] to shape the readiness of students to use e-learning” (p. 1). Of course, there is the need for LMS, servers, etc., but these resources are utilized for traditional courses in addition to blended and e-learning courses. As the present study is focused on student readiness (rather than student success) it does not incorporate institutional support or faculty buy-in into the subscales. Indeed, as mentioned previously, institutions frequently seek to pass technological costs and responsibilities to the students, diminishing the institution’s role in terms of support (Appana, 2008).

**Measures of online learning readiness**

This section includes a sample of the plethora of e-learning/online learning/m-learning readiness studies that have been conducted. Since 2000, the number of studies has ballooned. As many of these studies use the same or extremely similar instruments and, as will be noted below, they typically measure nearly identical variables, it is redundant to present an exhaustive list of every online learning readiness study that has been conducted, even with the limited time frame of the last two decades.

Not long after Warner et al.’s groundbreaking online learning readiness assessment in 1998, McVay (later named McVay Lynch) introduced her own measure called the Readiness for Online Learning Questionnaire as part of a student orientation course for online learning (McVay, 2000; as cited by Smith et al., 2003). This 13-item questionnaire looked at self-direct learning, interpersonal communication skills, academic locus of control, and basic technology skills (Doe et al., 2017). Smith and colleagues tested the validity of McVay’s instrument, they examined 107 bachelor’s level students from the US and Australia. They found the reliability to be “satisfactory, with a Cronbach alpha of 0.83,” and a principal component analysis, with 2 factors (self-management of learning and comfort with e-learning), that accounted for 48.5% of the variance (Smith et al., 2003, p. 61). Later, McVay Lynch recommended a simple 14-item self-evaluation to assess online learning readiness that is paired with specific sections of their text (sort of like an at-home online learning orientation program) (McVay Lynch, 2012). While this simple test can give individual students a basic idea of what they may need to improve in, as well as resources for improving in those domains, it is not comprehensive enough for assessing groups of students for programmatic changes.

Hung et al. 2010

The Online Learning Readiness Scale was developed by Hung, Chou, Chen, and Own. It consisted of 18 items across five factors: computer/internet self-efficacy, self-
directed learning, learner control, motivation for learning, and online communication self-efficacy (M.-L. Hung et al., 2010). Hung and colleagues, in developing their scale, noted the lack of technical computer-use skills, internet navigation skills, and learner control which were absent from McVay’s instrument (2010, p. 1081). Each of the items had a good factor loading—based off of a confirmatory factor analysis—between 0.55 and 0.85 (2017, p. 1084). Additionally, each subscale had a composite reliability of at least 0.72 (p. 1085). The researchers did note a couple of weaknesses: the average variance extracted for computer/internet self-efficacy and learner control was below the 0.50 threshold (0.477), the sample was not sufficiently diverse across disciplines, and they did not check criterion-related validity (as Dray and colleagues do in their validation study) (H. Hung et al., 2017, p. 1088).

This instrument was recently utilized by Wulanjani and Indriani (2021), along with interviews, to examine students’ readiness for emergency remote learning in Indonesia due to COVID-19. The instrument revealed a moderate level of online learning readiness, with motivation for learning being the greatest contributor to readiness. Learner control received the lowest scores with a mean score of 2.75 on a scale of 1-4. While this is still in the acceptable/moderate range of 2-<3 (p. 49), the researchers found that online distractions detracted from the students’ readiness.
Dray et al. 2011

Dray, Lowenthal, Miszkiewicz, Ruiz-Primo, and Marczynski developed the Revised Online Learning Readiness Survey through a validation study on the original survey developed in 2007 by Dray and Miszkiewicz (Dray et al., 2011, p. 38). This revised survey went through three phases: survey development, item analysis, and survey validation and reliability. The original survey consisted of 36 items. After conducting reliability analysis, confirmatory factor analysis and convergent validity analysis, the resulting survey consisted of 32 items across five factors (which included learner characteristics and four technological capability subscales—renamed the Information and Communications Technology Engagement Subscales—including mental access, material access, technological skills access, and usage access). The change in the technology capability subscales was due, in large part, to the work of van Dijk’s work on the digital divide—and second level digital divide (Dray et al., 2011, pp. 42–43). Validity was measured against three existing surveys: Bernard et al. (2004), Mattics and Dixon (1999), and McVay (2000, 2001), which was embedded into the Bernard et al. survey (Dray et al., 2011, pp. 38–40). Dray and colleagues listed the major advantages of an instrument of this type: student may self-identify the areas they may have difficulty in, faculty and programs can use this information to develop orientations and other support services, faculty and instructional designers can design courses content in a
better and more engaging way, and program directors and administrators can better understand the needs of faculty and students (Dray et al., 2011, p. 44).

Pingle 2011

Pingle’s (2011) instrument consisted of 87 items across four scales: IT skills (24 items), collaborative learning (20 items), independent learning (23 items), and reflection on learning (20 items). It was tested on 631 students from the University of Mumbai and wished to compare readiness for and attitudes towards e-learning among students in the arts, sciences, and commerce departments. The results of the study indicated no differences in readiness for or attitude towards e-learning across the disciplines. On the subscales, there were no differences in IT skills, collaborative learning, and independent learning. However, for reflection on learning, art students scored significantly higher than commerce students. Examining differences in sex, male students scored higher on all measures. Researchers attribute the higher score in IT skills to social restrictions on women within their culture. As seen in other studies, positive attitude and readiness were positively correlated. As such, males scored higher on both (Pingle, 2011, pp. 160–161).

Hussin et al. 2012

Hussin, Manap, Amir, and Krish’s study of mobile learning readiness of Malaysian university students consisted of 38 Likert-type items—plus demographics questions—that focused on technological access and skills as well as the students’
perception of their own readiness. Students selected strongly agree/disagree, agree/disagree, or not applicable for each item. For the analysis, however, the researchers collapsed the strongly agree/agree and strongly disagree/disagree items. This may have affected the overall results. That being noted, this survey focused much more heavily on specific technological skills and access than other assessments. Survey items consisted of statements such as: “Does your hand phone have 4g service”, “Can your hand phone read/open up the following files? a. Word document b. PDF document c....”, and whether or not they are comfortable “sharing their internet connection from mobile phone to their computer” (Hussin et al., 2012, pp. 278–280). The majority of other survey instruments do not get so granular with their technological skills questions, giving this study a unique perspective. The researchers found that, at the time of the study, students strongly preferred conventional classes over mobile learning, but also overwhelmingly supported blended learning (Hussin et al., 2012, p. 281).

*Tang and Chaw 2013*

Tang and Chaw’s (2013) study identified six learning aspects for examining student attitude and adaptability for blended learning: learning flexibility, online learning, study management, technology, online interaction, and classroom learning. The researchers noted that with blended learning, the difficulties that students face are similar to fully online learning—for example, taking initiative in the learning process as
well as time management and self-motivation (Vaughan, 2007 and Fong et al., 2005, respectively, as cited by Tang & Chaw, 2013). The researchers used the first five learning aspects—all but classroom learning—to determine blended learning adaptability (which is congruous to online learning readiness). They posited that readiness for blended learning would be negatively affected by a positive attitude toward classroom learning. Their measure consisted of 21 items across the five factors: attitude towards online learning, attitude towards online interaction, attitude towards study management, attitude towards classroom learning, and attitude towards learning flexibility. Researchers had some interesting findings. One was that technology “was not a hindrance to the students” (Tang & Chaw, 2013, p. 79). In other words, both access to technology and requisite computer skills were not found to be significant predictors in this study. Another important finding was that there was a negative relationship between classroom learning and readiness for blended learning—i.e., students who really liked classroom learning were determined to have lower overall readiness for blended learning. The third major finding was that students who had a positive attitude towards the online learning components (i.e., blended learning adaptability), had a positive relationship with blended learning readiness.

Ali (2016) utilized the e-learning readiness instrument developed by Watkins and colleagues (2004) to assess readiness among 113 nursing students at Shaqraa
University in Egypt. The assessment consisted of 27 items across six subscales: technology acceptance, online skill and relationships, motivation, online audio/video, internet discussions, and importance to your success. Their analysis found that the majority of nursing students demonstrated high e-learning readiness. In terms of the subscales, technology acceptance was highest and motivation was the lowest. Interestingly, though just over 90 percent of the participants had experience with online learning, nearly ⅓ said they preferred using e-learning in their nursing program. It should be noted too that the researcher makes the bold assertion that “there are no obstacles to learning through e-learning anymore” (p. 1), a claim which is not substantiated by the literature.

Adams et al. 2018

Adams, Sumintono, Mohamed, and Noor utilized the Blended Learning Readiness Engagement Questionnaire to examine blended learning readiness among 366 (235 undergraduate and 131 postgraduate) university students from diverse backgrounds (Adams et al., 2018). The survey instrument consisted of 41 items across six dimensions: technology skills, attitude towards blended learning, technology availability, computer and internet efficacy, technology usage, and self-directed learning. Unlike Tang and Chaw’s examination, this study did not include a separate section for attitude toward traditional classrooms. The researchers found that older learners tended to be more independent. Students under 20, compared to those who
were above 50, were more likely to finish and turn in their assignments on time. Male students preferred lectures and were more confident in asking questions in online discussions. While students scored highly on technology skills, they scored much lower on self-directed learning. The authors speculated that this may be why the majority of students preferred traditional learning, even though they were technologically capable. The study also found statistically significant differences in age, gender, ethnicity, field of study, and level of education. They found that international students in Malaysia were more active in blended learning, especially compared to Chinese students, who were the least active. They also found differences in how groups of students (Bumiputera, Chinese, and Indian) use email, social media, mobile devices, and the use of multi-tasking and multiple screens in blended learning. Indeed, the authors state, “In terms of ethnicity, findings of this study revealed that international students participated more actively in blended learning activities, whereas Chinese students were the least likely of all the ethnicities” (p. 245). Adams et al also note that this is in contrast to Islam et al. (2011) who found no influence of “race” on e-learning (p. 246).

*Wei and Chou 2020*

Wei and Chou (2020) collected data using three different online learning readiness instruments: Online Learning Readiness Perception Scale—developed by the researchers, as they could not find an instrument that met their requirements—, Online Learning Readiness Scale (M.-L. Hung et al., 2010), and Online Course Satisfaction
Scale—which did not have attribution and should not be confused with the scale of the same name developed by Bayrak, Tibi, and Altun (2020). The Online Learning Readiness Perception Scale consisted of 23 statements with no opposite-scaled items—rated using a Likert-type scale—across five factors (and accounting for 53.22% of the variance in the model). Please see the earlier section on Hung et al. for a description of the Online Learning Readiness Scale. Finally, the Online Course Satisfaction Scale, which the researchers noted had been in use by their university for ten years, consisted of seven items rated on a Likert-type scale. The researchers use structural equation modeling to analyze how learning perception and readiness contribute to performance and course satisfaction. They found that perception significantly affects computer/internet self-efficacy, self-directed learning, learner control, motivation for learning, and online communication self-efficacy. There was no direct effect, however, of perception and online learning performance or course satisfaction. That being noted, the mediating effects are partially supported with positive online learning perception leading to greater online discussion scores, mediated by computer/internet self-efficacy and motivation for learning. Additionally, positive perception led to greater course satisfaction, mediated by computer/internet self-efficacy.

In other words, in this study, college students’ online learning perceptions significantly and positively affected their online learning readiness. Students with higher and positive online learning perception (e.g., perceived ease of
loading in online courses, perceived accessibility of online learning resources) felt more confident and were readier to participate in online courses. (Wei & Chou, 2020, p. 13)

The researchers had several pedagogical recommendations including: promoting the features of online learning early in the course, inviting previous course attendees to share their experiences, actively participating in the online discussion forums in addition to encouraging the students and guiding them to appropriate resources, and, for LMS developers to simplify system interfaces so they are easier for students and teachers to use.

Joosten and Cusatis 2020

Joosten and Cusatis (2020) studied a sample of 620 students from two public midwestern institutions of higher learning (one a four-year doctoral granting institution and the other a two-year technical college). The instrument was the Distance Education and Technological Advancements Research Toolkit (Joosten & Reddy, 2015) and consisted of 68 items across six subscales: online work skills, social technology familiarity, organization, online learning efficacy, self-directedness, and socialization. The study examined the relationship between student characteristics, measured by the subscales, and their outcomes in an online course at their respective institutions. The researchers found that social technology familiarity, organization, and self-directedness were not significant predictors of learning, satisfaction, or performance. Only online
efficacy was a significant predictor of learning, satisfaction, and performance—as well as the only significant predictor of both learning and performance. Satisfaction was also predicted by online work skills and socialization. Socialization had a negative relationship with satisfaction (socialization measured the students “preference or need for social interactions” and a high socialization score meant that they were apt and comfortable socializing online), which is intriguing, since one would assume that being more comfortable socializing online would lead to greater satisfaction in an online course. Demographically, students with disabilities were significantly lower in their perception of their organization skills and self-directedness than those who did not report physical or cognitive disabilities. Similarly, minority students scored lower in organization, self-directedness, and online work skills than those who do not identify as a racial or ethnic minority. However, minority students did score higher for socialization.

*Not all studies are created equal*

Wladis and Samuels (2016) conducted a study with a sample of 24,006 students at a large urban community college who had expressed interest in taking an online course. The survey instrument administered was one which had been developed by the college’s faculty and staff in their e-learning center (p. 45). What they found was that while scores on the e-learning readiness survey do predict course outcomes generally, they still do not predict outcomes in e-learning courses any better than
for face-to-face courses, even when e-learning courses are separated into the categories that differentiate between fully online and hybrid classes. (p. 51)

The researchers also found that the survey instrument was a strong predictor of course enrollment, indicating that students who scored poorly on the assessment were less likely to enroll in an online course, even though the survey does not appear to be an accurate predictor of achievement as compared to a face-to-face course. Joosten and Cusatis point out similar issues in Bernard et al. (2004), where course grade and GPA were predicted by online efficacy, self-direction, and interaction, but only accounted for a small amount of variance in the model and “neglected to control for overall GPA” (Joosten & Cusatis, 2020, p. 181). Farid (2014), as well, in their study of 10 survey instruments, found that most are “old and less robust” and that “more serious research” should be done to prove the validity and reliability of instruments” (p. 379). It is worth noting that Bernard et al. (2004), Watkins Leigh, and Triner (2004), and Kerr et al. (2006) all mentioned previously, were three of the ten studied by Farid.

**My survey instrument**

Martin, Stamper, and Flowers developed the Student Readiness for Online Learning instrument in 2018 (Martin et al., 2020). The instrument consisted of 20 items in four subscales, which were identified through a thorough examination of the literature, instruments currently in use by various universities, and existing online learning readiness survey instruments including: Mattice and Dixon (1999); McVay
(2000, 2001, 2003); Watkins, Leigh, and Triner (2004); Kerr, Rynearson, and Kerr (2006); Dray and Miszkiewicz (2007); Hung, Chou, Chen, and Own (2010); Bernard, Brauer, Abrimi, and Surkes (2004); Yu and Richardson (2015); and Zimmerman and Kulikowich (2016). The four subscales—which will be examined in depth in chapter three—were: online student attributes, time management competency, technical competency, and communication competency. Each subscale item was rated on a Likert-type scale twice, once for perception of importance of that item for online learning and once for the respondents’ confidence in that item for online learning. Data were collected from a southeastern university (111 respondents) as well as through online program directors (66 respondents) for a total of 177 total respondents (the researchers note that there was no statistical difference between the two groups, so they were combined in the analysis (Martin et al., 2020, p. 45). The researchers examined the relationship between perception of importance and confidence in the competencies and predictors including: sex (the researchers use the term “gender”), undergraduate/graduate status, major (defined as education major and non-education major, race (which they define as white and non-white), course format (defined as blended, asynchronous, and synchronous), age, and number of online courses previously taken.

The researchers found no statistically significant differences based on sex, undergraduate/graduate status, or education/non-education majors across all measures. There were, however, significant differences based on race. White students were more
confident in online student attributes and technology skills than non-white students. Additionally, non-white students rated the importance of communication higher than the white respondents. For students currently engaged in online coursework, blended format students (as opposed to fully online asynchronous and synchronous students) rated their confidence in online student attributes and communication higher than other students. Age did not correlate with any of the factors for either perception of importance or confidence for online learning except for confidence in communication (though the researchers do not share if it was a positive or negative correlation). Time management was the only competency that correlated with the number of online courses previously taken.

This survey instrument has also been used to compare students in Germany and the USA (Küsel et al., 2020). This time the results from the original study were compared to data gathered from 72 students enrolled in hybrid courses at a university in Germany. German students rated technical competence as being the most important and communication being the least important (U.S. students also rated communication as the least important, though time management was rated slightly more important than technical competency). MANOVA examination revealed significant differences in perception of importance, with U.S. students rating every subscale as being much more important than German students thought. Similar results were found in terms of confidence in the students’ ability to accomplish the competencies. As before, U.S.
students rated their confidence significantly higher than German students on all subscales.

More recently, the survey instrument was employed by Suryanti, Sutaji, and Iswanti to examine perception of online learning readiness among mathematics students at Universitas Muhammadiyah Gresik in Indonesia (Suryanti et al., 2021). The sample of 125 students rated the scales similarly to US students, with each scale being rated close to 4.5 for both importance and confidence (with all scores ranging from 4.32, for Time Management importance, to 4.75 for Technical Competence confidence). For comparison, US students’ scores ranged from 4.22, for Communication importance, to 4.63 for Time Management importance as well as Technical Competence confidence, and German students’ scores ranged from 3.47, for Communication confidence, to 4.14 for Technical Competence importance. The researchers found a significant difference between the male and female students. The biggest difference between male and female math student scores was the perception of the importance of Time Management, with female students rating it an average of 3.71 and male students rating it an average of 4.87.

Conclusion

This chapter presented a review of the literature including an overview of online learning, the development of online learning, assessing online learning readiness, issues related to online learning readiness—including second-level digital divide, faculty buy-
in, persistence, and preparedness programs—, an examination of ten online learning readiness assessments (as well as a discussion of some of the problems with these measures), and an overview of the current study’s survey instrument and its findings in two studies. The following chapter will present the methodology of this dissertation.
For this study, I utilized the survey instrument developed by Martin, Stamper, and Flowers (2020). The Student Readiness for Online Learning (SROL) questionnaire measures online learning readiness through the student’s reported importance for each dimension as well as their perceived confidence in those dimensions. The instrument is divided into four subscales: online student attributes, time management, communication, and technical. Upon receipt of IRB approval, the SROL questionnaire was compiled through Qualtrics Research Suite online survey software and distributed to all currently enrolled international students at the University of Mississippi via the International Student and Scholar Services weekly newsletter. Additional participants were obtained by the researcher reaching out directly to international education colleagues at various universities throughout the U.S. as well as through the professional network–NAFSA Association of International Educators–and requesting that they share the survey information and link with their currently enrolled international student populations. A priori power analysis was conducted using G*Power (Version 3.1; Faul et al., 2007; Faul et al., 2009) to determine appropriate
sample size for a moderate effect size. Survey data were exported from Qualtrics as a comma separated values file (.csv) and data were cleaned using Microsoft Excel for Mac (Version 16.43). Results of the data cleanup are presented in Chapter 4. Descriptive statistics are reported in Chapter 4. To examine the within subject effects, Repeated Measures ANOVAs (Analysis of Variance) have been conducted on the subscales for importance and confidence. Between subjects effects have been explored through descriptive plots. Data were imported into and analyzed using JASP statistical software (Version 0.14.1; JASP Team, 2021).

The SROL is a twenty-item instrument divided into four equal subscales (online student attributes, time management, communication, and technical) and assessed across two dimensions (importance and confidence). The participants rated each item twice, once for how important they view the item for success in an online learning environment and once for how confident they are in terms of their readiness for the item in online learning. Items were rated on a Likert-type scale ranging from 1 to 5. For the importance ratings, the scale descriptions are: not important at all (1), unimportant (2), neither important nor unimportant (3), somewhat important (4), and very important (5). For the confidence ratings, the scale descriptions are: very unconfident (1), somewhat unconfident (2), neither confident nor unconfident (3), somewhat confident (4), and very confident (5).
Reliability

To test reliability, Martin, Stamper, and Flowers (2020) submitted the assessment to a panel of experts to review. The Validation Rubric for Expert Panel (Simon & White, 2013) was used to “measure face validity, construct validity, and content validity” (Martin, et al., 2020, p. 47). After revision, the “instrument and review rubric were sent to four online learning experts to identify face and content validity” (p. 47). Per expert recommendation, some items were reworded to aid in clarity. Overall reliability for the instrument had a Cronbach’s alpha of 0.93 (p. 47). Küsel, Martin, and Markic (2020), using the same instrument, reported an overall reliability of 0.87 (p. 5). Suryanti, Sutaji, and Iswanti (2021) did not report overall reliability nor the reliability of the individual subscales. The reliability for each subscale (as reported by Martin et al. and Küsel et al., respectively) is reported below.

Subscales of the present study

Even in the earliest studies on online learning readiness, researchers have recognized that readiness is multifaceted. In Warner and colleagues’ exploration of student readiness for online learning, readiness was divided into three areas: modality preference, competence and confidence in computer-mediated communication, and self-directed learning ability (as cited by Smith et al., 2003, p. 57). One meta-analysis of seven more recent online learning readiness studies found that researchers identified and used a total of 15 different factors that affect readiness, including: policy,
knowledge, skill, experience, attitude, motivation, habits, technology, finances, human resources, infrastructure, content, culture, organizational barriers, and psychological factors (Rohayani et al., 2015, p. 233). Rohayani and colleagues identified attitude and skill as the most common factors (p. 233). Demir and Yurdugül (2015) identified 12 similar factors across 11 different studies, with competency of technology use, self-directed learning, and access to technology being used in more than half of the studies (p. 186). Demir and Yurdugül proposed a six-component readiness model that consists of: competency of technology use, self-directed learning, access to technology, confidence in prerequisite skills and yourself, motivation, and time management. Similar factors were found in the studies examined by Hashim and Tasir (2014) and Farid (2014). Likewise, within each of these factors, there are a myriad of different dimensions examined by researchers (as seen in Al-araibi and colleagues’ 2016 study of technological dimensions in online learning readiness assessments). There is equivalent variation in regard to the number of survey items across studies as well, with some having as few as 13 survey items and some as many as 45 (McVay, 2000 and Kerr, Rynearson, and Kerr, 2006, respectively, as cited by Martin et al., 2020). Through a thorough review of survey instruments, Martin and colleagues identified four common constructs: online student attributes, time management competency, technical competency, and communication competency (2020, p. 41). These dimensions were both
common and significant among studies of online learning readiness (Küsel et al., 2020, p. 3; Martin et al., 2020, p. 41). Figure 2 illustrates these dimensions.

Figure 10: Dimensions of student readiness for online learning (Küsel et al., 2020, p. 4)

**Online Student Attributes**

Xu and Jaggars (2014) noted that online learners must “assume greater responsibility for their learning...need[ing] high levels of self-regulation, self discipline, and a related suite of metacognitive skills” (p. 634). The attributes most frequently identified in the literature are being disciplined/self-regulated (Kramer, 2002 as cited by Davis, 2006; Horzum et al., 2015; Martin et al., 2020; Selim, 2005; *What Makes a Successful*
Online Student?, n.d.), attitude/academic self-efficacy (Dray et al., 2011; Joosten & Cusatis, 2020; Martin et al., 2020; Selim, 2005; What Makes a Successful Online Student?, n.d.; Wladis & Samuels, 2016), high motivation (Kramer, 2002, and Swan 2004, as cited by Davis, 2006; Mutambik et al., 2018; What Makes a Successful Online Student?, n.d.), independent/self-directed (Kramer, 2002, and Swan, 2004, as cited by Davis, 2006; Martin et al., 2020; Wladis & Samuels, 2016), active learner/locus of control (Kramer, 2002, as cited by Davis, 2006; Dray et al., 2011; Horzum et al., 2015; Martin et al., 2020; Wladis & Samuels, 2016), and adaptable (Kramer, 2002, as cited by Davis, 2006; What Makes a Successful Online Student?, n.d.). Martin and colleagues noted that “academic self-efficacy affects academic persistence, performance, and motivation” (Blayone, Mykhailenko, Kavtaradze, et al., 2018; Blayone, Mykhailenko, vanOostveen, et al., 2018; Gore Jr, 2006; Martin et al., 2020, p. 42). The SROL items related to online student attributes are: Set goals with deadlines; Be self-disciplined with studies; Learn from a variety of formats; Be capable of following instructions in various formats; and Utilize additional resources to answer course-related questions. This subscale had reported reliability of 0.94 and .77 for perception of importance and 0.93 and 0.77 for perceived confidence (Martin et al., 2020, p. 47 and Küsel, et al., 2020, p. 6, respectively).

**Time Management Competency**

Time management, as described by the literature, is the ability to keep up with assignments, time differences, and course modality (i.e. synchronous/asynchronous,
etc.) (Roper, 2007, Discenza, Howard, & Schenk, 2002, Garrison, Cleveland-Innes, & Fung, 2004 as cited by Martin et al., 2020). It has been linked to readiness and success in online learning in numerous studies (Dray et al., 2011; Smith, 2001, as cited by Martin et al., 2020, 2020; Selim, 2005; What Makes a Successful Online Student?, n.d.; Rovai, 2003, as cited by Zheng, 2020). Martin and colleagues, citing McVay (2001), Smith and colleagues (2003), Smith (2005), and Zimmerman & Kulikowich (2016), described time management as “essential to online learning” (2020, pp. 42–43). The SROL items related to time management competency are: Devote hours per week regularly for the online class; Stay on task and avoid distractions while studying; Utilize course schedule for due dates; Complete course activities/assignments on time; and Meeting multiple deadlines for course activities. This subscale had reported reliability of 0.95 and .65 for perception of importance and 0.92 and 0.79 for perceived confidence (Martin et al., 2020, p. 47 and Küsel, et al., 2020, p. 6, respectively).

**Technical Competency**

The SROL does not focus on technological access (a factor noted by Appana, 2008; Dray et al., 2011; Mutambik et al., 2018; van Deursen & van Dijk, 2019; van Dijk, 2005; What Makes a Successful Online Student?, n.d.; Wladis & Samuels, 2016). Rather, it assumes that students enrolled in university coursework already meet the technological requirements. Indeed, many university programs have minimum computer and internet requirements for enrollment. Technical competency centers on things like
computer efficacy (Adams et al., 2018; Dray et al., 2011; C. Y. Lau & Shaikh, 2012; Wladis & Samuels, 2016) and skills (Swan, 2004, as cited by Davis, 2006; Selim, 2005), prior experience (Selim, 2005), internet efficacy (Adams et al., 2018; Dray et al., 2011; C. Y. Lau & Shaikh, 2012; Tsai and Tsai, 2003, as cited by Martin et al., 2020; Mutambik et al., 2018), information-seeking skills (Martin et al., 2020). In fact, Bernard and colleagues found that “students who used computers in educational endeavors more frequently were positive in terms of both ‘beliefs’ [about the nature and effectiveness of online learning] and ‘skills’” (Bernard et al., 2004, p. 42). Blayone and colleagues, likewise, found students with low digital self-efficacy reporting that struggle with digital tasks make them feel that “‘technology is not enhancing [their] learning--it’s hindering it’” (Blayone, Mykhailenko, vanOostveen, et al., 2018, p. 1393 quoting a research participant). Examples of technical skills include sending and receiving email, finding relevant information, installing software, using learning management systems (LMS), etc. The SROL items related to technical competency are: Complete basic computer operations; Navigate through the course in the Learning Management System; Participate in course activities; access the online grade book for feedback on performance; and Access online help desk/tech support for assistance. This subscale had reported reliability of 0.91 and .79 for perception of importance and 0.91 and 0.89 for perceived confidence (Martin et al., 2020, p. 48 and Küsel, et al., 2020, p. 6, respectively).
Communication Competency

One of the keys to communication competency is comfort with online learning. In addition to writing skills (What Makes a Successful Online Student?, n.d.), “the student’s willingness to connect and communicate with others via computer-mediated communication like email, discussion boards, and chat, as well as confidence in accessing these resources” (Martin et al., 2020, p. 43) as being critical to students’ communication competency. One issue that researchers have found, however, is that many students are not comfortable. A “cross-sectional and longitudinal [study] of anonymous [discussion board] postings revealed 1% of students posting 50% of such messages, students responding to their own posts, and cases of peer impersonation” (Freeman and Bamford, 2004 as cited by Appana, 2008). McKavanagh et al. (2002) similarly found that participation in online discussion boards is essential to online learning effectiveness (Martin et al., 2020, p. 43). Kaymak and Horzum (2013) found a positive correlation between e-learning communication interactions and achieving individual learning outcomes (Martin et al., 2020, p. 44). Moreover, social presence has been shown to be an indicator of learner satisfaction as well as perceived learning (Gunawardena and Zittle, 1997, Swan, 2002, and Swan and Shih, 2005, as cited by Whiteside & Garrett Dikkers, 2008). The SROL items related to communication competency are: Use asynchronous technologies; Use synchronous technologies to communicate; Ask the instructor for help via email, discussion board, or chat; Ask
classmates for support; and Discuss feedback received with the instructor. This subscale had reported reliability of 0.88 and .75 for perception of importance and 0.82 and 0.88 for perceived confidence (Martin et al., 2020, p. 48 and Küsel, et al., 2020, p. 6, respectively).

**Demographic Information**

In addition to the subscales of online student attributes, time management competency, technical competency, and communication competency, there are demographic factors that can affect online learning readiness. Lau and Shaikh (2012) identified gender, ethnicity, course year level, and financial aid status as predictors of learning readiness (as cited by Adams et al., 2018). In their own study, Adams and colleagues found differences in age, gender, ethnicity, field of study, and level of education. van Dijk noted, in his discussion of the 2nd-level digital divide, “Differential access to information and computer technologies (ICTs) is related to individuals and their characteristics: level of income and education, employment, age, sex, and ethnicity, to mention the most important ones” (van Dijk, 2005, Chapter 2, para. 1). While the SROL does not focus on access, specifically, historical access can lead to increased comfort with online learning and self-directed learning techniques. Additionally, Xu and Jaggars (2014) pointed out, “Students’ level of self-directed learning may vary according to gender, age, ethnicity, and education level. Studies of
adolescents and young adults show that females, White students, and individuals with higher prior educational attainment tend to be more self-directed” (p. 635).

As demographic characteristics have been shown to correlate with online learning readiness and this population has some unique characteristics, this study modified some of the characteristics that were gathered by Martin et al. (2020) and Küsel et al. (2020). Data were gathered in regards to students’ age, country of citizenship, current degree level, academic major, U.S. state/territory where their institution is located, number of university-level online courses taken previously, visa type, marital status, number of years within the U.S., and gender. Country of citizenship was utilized, rather than country of permanent residency, due to the confusing nature of what constitutes lawful permanent residence (e.g. some students may erroneously believe that long-term residence and intention to stay in a country indefinitely constitutes permanent residency). The focus of the study was only on residential students who are within the U.S., not those enrolled online from their home countries/countries of permanent residence.

Rationale for the study

While examinations of online learning readiness are plentiful, to the best of my knowledge, there were no previous examinations of perception of online student readiness among international students in the U.S. As online learning components are increasingly integrated into the higher education classroom, it is imperative that we
understand the areas in which our students perceive their abilities and what they perceive as being important to success in the online or blended learning environment. As perception influences readiness (Rollnick et al., 1999), this study will provide important insight into the areas that international students in the U.S. may need additional support from their institutions.

Data Collection

After obtaining IRB approval, data were gathered from colleges and universities throughout the United States via recruitment through a professional network of international educators (i.e., NAFSA Association of International Educators) who disbursed the call for participation with their international student populations as well as at an R1 research intensive, public, flagship university in the Southeastern United States. Participants were undergraduate and graduate international residential students who were currently enrolled at institutions within the U.S. In general, this means the students were F or J visa types. F-visa students are the most common and constituted the majority of survey participants. Two incentives were offered to participants: first, for each respondent, $1 was donated to the Scholars At Risk Network (“Scholars At Risk Network”, 2021); second, each participant who completed a voluntary contact form (available upon completion of the survey instrument) was entered into a drawing for a $100 gift card to Amazon.com. Within the survey, the two dimensions were presented in a random order (i.e. some students completed the importance dimension first and
some completed the confidence dimension first). Additionally, within each dimension, each subscale (and within each subscale, each item) was presented in a random order. This randomization was implemented to help eliminate order bias.

**Data Analysis**

To analyze the data, the researcher conducted repeated measures ANOVAs to test equality of means for each of the subscales (online student attributes, time management competency, technical competency, and communication competency) with each of the conditions (importance and confidence) serving as the levels. Data were analyzed across age, country, region, current degree level, academic major, state or region where their institution is located, number of online courses previously taken, visa type, marital status, length of time within the U.S., gender identity, OECD status, percent of internet users per capita in the home country, and GDP Per Capita purchasing power parity (PPP) of the home country.

**Conclusion**

Chapter three has provided an overview of the study’s methodology. This included an examination of the subscales (online student attributes, time management competency, technical competency, and communication competence) as well as the rationale for the study, data collection, and data analysis. Results are presented in the following chapter.
CHAPTER 4
RESULTS

Data were downloaded from Qualtrics and imported into Microsoft Excel for Mac. Data cleanup removed a total of 102 entries. Fifty-two were removed due to incompleteness; 3 were removed due to incoherent responses to the demographics questions (e.g., a string of random letters and numbers instead of Academic Major or Birth Country); and 30 were identified as ineligible due to U.S. citizenship or lawful permanent residence. Fifteen additional responses indicated US Citizenship, however, they also indicated being on an F-1 student visa and having been in the U.S. for as few as 2 years. Analyses were conducted including and excluding these 15 questionable responses and there was no change in the results. As such, they were excluded from the final analysis. Two outliers were also removed. Once all of these were removed, 117 valid responses remained, which exceeded the a priori analysis minimum of N = 72 from G*Power (Version 3.1; Faul et al., 2007; Faul et al., 2009). Analyses were conducted in JASP (Version 0.14.1; JASP Team, 2021).

Repeated measures ANOVAs were conducted on the two dimensions (importance and confidence) for each of the four subscales (online student attributes,
time management, technical competency, and communication competency. An alpha level of 0.05 was utilized for this study. For each repeated measures ANOVA with a significant difference in the means of the importance and confidence of the subscale, demographic variables were examined for between subjects effects. Continuous variables were analyzed using Pearson’s correlation coefficient. Additionally, certain nominal variables (such as Birth Country and Academic Major) had instances where n = 1 so they were grouped by category (such as Region and School, for example) for analysis. These variables are presented in the recoded form in the descriptive statistics.

**Descriptive Statistics and Reliability Analysis**

Descriptive statistics for the subscales and demographic variables are presented in Tables 1 and 2 below. Sufficient reliability was indicated for the scores on the subscales with Cronbach’s α between 0.856 (highest) and 0.737 (lowest). Previous studies utilizing the SROL reported Cronbach’s α between 0.95 (highest) and 0.88 (lowest) (Martin et al., 2020) and between 0.89 (highest) and 0.65 (lowest) (Küsel et al., 2020) on the subscales. Mean, standard deviation, and reliability are reported for each subscale. For demographic variables, mean or N is reported (depending on whether or not it is a continuous, ordinal, or nominal variable) along with standard deviation (for continuous variables) or percent (ordinal and nominal variables).
Table 1

*Student Readiness for Online Learning Descriptive Statistics*

<table>
<thead>
<tr>
<th>Statement</th>
<th>Importance (\mu) (S.D.)</th>
<th>Confidence (\mu) (S.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Online Student Attributes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set goals with deadlines</td>
<td>4.436 (0.824)</td>
<td>4.308 (0.914)</td>
</tr>
<tr>
<td>Be self-disciplined with studies</td>
<td>4.590 (0.790)</td>
<td>4.222 (0.911)</td>
</tr>
<tr>
<td>Learn from a variety of formats (Lectures, videos, podcasts, online</td>
<td>4.444 (0.736)</td>
<td>4.368 (0.826)</td>
</tr>
<tr>
<td>discussion/conferencing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Be capable of following instructions in various formats (written, video,</td>
<td>4.556 (0.700)</td>
<td>4.385 (0.818)</td>
</tr>
<tr>
<td>audio, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilize additional resources to answer course-related questions</td>
<td>4.470 (0.749)</td>
<td>4.410 (0.800)</td>
</tr>
<tr>
<td>(course content, assignments, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mean (S.D.)</strong></td>
<td>4.499 (0.069)</td>
<td>4.338 (0.075)</td>
</tr>
<tr>
<td><strong>Reliability: Cronbach’s (\alpha)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(95% Confidence Intervals)</td>
<td>0.856</td>
<td>0.828</td>
</tr>
<tr>
<td><strong>Time Management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Devote hours per week regularly for the online class</td>
<td>4.256 (0.921)</td>
<td>4.094 (1.017)</td>
</tr>
<tr>
<td>Stay on task and avoid distractions while studying</td>
<td>4.547 (0.782)</td>
<td>3.855 (1.139)</td>
</tr>
<tr>
<td>Utilize course schedule for due dates</td>
<td>4.521 (0.772)</td>
<td>4.436 (0.803)</td>
</tr>
<tr>
<td>Complete course activities/assignments on time</td>
<td>4.641 (0.688)</td>
<td>4.564 (0.712)</td>
</tr>
<tr>
<td>Meeting Multiple Deadlines for course activities</td>
<td>4.513 (0.738)</td>
<td>4.325 (0.839)</td>
</tr>
<tr>
<td><strong>Mean (S.D.)</strong></td>
<td>4.496 (0.143)</td>
<td>4.255 (0.283)</td>
</tr>
<tr>
<td><strong>Reliability: Cronbach’s (\alpha)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(95% Confidence Intervals)</td>
<td>0.838</td>
<td>0.810</td>
</tr>
<tr>
<td><strong>Communication Competency</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use asynchronous technologies (discussion boards, email, etc.)</td>
<td>4.402 (0.743)</td>
<td>4.359 (0.771)</td>
</tr>
<tr>
<td>Use synchronous technologies (WebEx, Collaborate, Adobe Connect, Zoom,</td>
<td>4.376 (0.807)</td>
<td>4.393 (0.861)</td>
</tr>
<tr>
<td>etc.) to communicate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask the instructor for help via email, discussion board, or chat</td>
<td>4.581 (0.660)</td>
<td>4.479 (0.783)</td>
</tr>
<tr>
<td>Ask classmates for support (accessing the course, clarification on a</td>
<td>4.214 (0.889)</td>
<td>3.940 (1.077)</td>
</tr>
<tr>
<td>topic)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Statement**

<table>
<thead>
<tr>
<th>Importance μ (S.D.)</th>
<th>Confidence μ (S.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss feedback received (assignments, quizzes, discussion, etc.) with the instructor</td>
<td>4.333 (0.851)</td>
</tr>
<tr>
<td>Mean (S.D.)</td>
<td>4.381 (0.133)</td>
</tr>
<tr>
<td>Reliability: Cronbach’s α (95% Confidence Intervals)</td>
<td>0.755</td>
</tr>
</tbody>
</table>

**Technical Competency**

<table>
<thead>
<tr>
<th>Importance μ (S.D.)</th>
<th>Confidence μ (S.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete basic computer operations (e.g. creating and editing documents, managing files and folders)</td>
<td>4.333 (0.777)</td>
</tr>
<tr>
<td>Navigate through the course in the Learning Management System (e.g. Moodle, Canvas, Blackboard, etc.)</td>
<td>4.462 (0.760)</td>
</tr>
<tr>
<td>Participate in course activities (discussions, quizzes, assignments, synchronous sessions)</td>
<td>4.564 (0.712)</td>
</tr>
<tr>
<td>Access the online grade book for feedback on performance</td>
<td>4.479 (0.714)</td>
</tr>
<tr>
<td>Access online help desk/ttech support for assistance.</td>
<td>4.111 (0.898)</td>
</tr>
<tr>
<td>Mean (S.D.)</td>
<td>4.390 (0.176)</td>
</tr>
<tr>
<td>Reliability: Cronbach’s α (95% Confidence Intervals)</td>
<td>0.737</td>
</tr>
</tbody>
</table>

**Table 2**

**Student demographic characteristics**

<table>
<thead>
<tr>
<th>Variables</th>
<th>μ/N</th>
<th>(S.D.)/Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Min: 18; Max: 48</td>
<td>26.188</td>
</tr>
<tr>
<td>Number of years in the U.S.</td>
<td>Min: 0; Max: 21</td>
<td>2.832</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>54</td>
</tr>
<tr>
<td>Number of previous university-level online courses</td>
<td>Min: 0; Max: 111</td>
<td>10.051</td>
</tr>
<tr>
<td>Visa Type</td>
<td>F-1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>H-4</td>
<td>1</td>
</tr>
</tbody>
</table>
Variables | \( \mu/N \) | (S.D.)/Percent
--- | --- | ---
J-1 | 16 | 13.675
Marital Status
Not Married | 94 | 80.342
Married | 23 | 19.658
Africa | 17 | 14.530
Region
Americas | 12 | 10.256
Asia | 71 | 60.684
Europe | 17 | 14.530
Internet Users % Per Capita
Min: 12.9%; Max: 99.54% | 59.919 | (26.069)
GDP Per Capita PPP*
Min: 0**; Max: 95237.24 | 19652.067 | (18112.705)
OECD Status
Non-member | 89 | 76.068
Member | 28 | 23.932
Associate's | 2 | 1.709
Bachelor's | 30 | 25.641
Master's | 53 | 45.299
Doctoral | 30 | 25.641
Non-degree | 2 | 1.709
Accounting | 3 | 2.564
Applied Science | 22 | 18.803
Business | 18 | 15.385
Education | 10 | 8.547
Engineering | 9 | 7.692
Law | 3 | 2.564
Liberal Arts | 34 | 29.060
Pharmacy/Health | 18 | 15.385

* Current International Dollars (The World Bank Group, 2022a)
** No data available for Cuba

It should be noted that while it may appear that there is an oversampling of students from Asia, this is not the case. International students from Asia make up approximately
71% of all international students in the U.S. (Institute of International Education, 2021). In the present study, they make up approximately 61% of the respondents.

**Research Questions**

The following sections present the analyses of the five research questions.

**Research Question One**

*What competencies do international students at U.S. universities consider important for their readiness for online learning?*

A one-way repeated measures ANOVA was conducted on the four subscales of the importance dimension of the SROL. Descriptive statistics for each of the subscales are in Table 1 at both the subscale and item level. The assumptions of normality and sphericity were met due to the balanced nature of the design. A statistically significant difference among the subscales was evident, $F(3, 348) = 3.840, p = 0.010$. A small effect size was evident, $\eta^2 = 0.032$ (see Table 3). Post hoc analyses were conducted to analyze significant differences between each of the subscales (see Table 4). No statistically significant differences were found. Due to the small effect size, despite statistical significance in the model, there are no meaningful differences. Descriptive statistics (Table 1) indicate that the average student views all four subscales as being between somewhat to very important for online learning at both the subscale and item level.
Table 3

RM ANOVA for Importance Dimension

<table>
<thead>
<tr>
<th>Cases</th>
<th>Sphericity Correction</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance</td>
<td>None</td>
<td>1.472</td>
<td>3</td>
<td>0.491</td>
<td>3.840</td>
<td>0.010*</td>
<td>0.032</td>
</tr>
<tr>
<td>Residuals</td>
<td>None</td>
<td>44.458</td>
<td>348</td>
<td>0.128</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Type III Sum of Squares; *p < 0.05

Table 4

Post Hoc Comparisons - Importance

<table>
<thead>
<tr>
<th>Online Student Attributes</th>
<th>Time Management</th>
<th>Communication</th>
<th>Technical</th>
<th>Communication</th>
<th>Technical</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Difference</td>
<td>SE</td>
<td>t</td>
<td>Cohen’s d</td>
<td>p bonf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----------</td>
<td>--------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.003</td>
<td>0.047</td>
<td>0.073</td>
<td>0.007</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.118</td>
<td>0.047</td>
<td>2.524</td>
<td>0.233</td>
<td>0.072</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.109</td>
<td>0.047</td>
<td>2.341</td>
<td>0.216</td>
<td>0.119</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.115</td>
<td>0.047</td>
<td>2.451</td>
<td>0.227</td>
<td>0.088</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.106</td>
<td>0.047</td>
<td>2.268</td>
<td>0.210</td>
<td>0.144</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.009</td>
<td>0.047</td>
<td>-0.183</td>
<td>-0.017</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Cohen’s d does not correct for multiple comparisons.

Note. P-value adjusted for comparing a family of 6

Research Question Two

What are international students’ perceptions of their confidence in their readiness for online learning?

A one-way repeated measures ANOVA was conducted on the four subscales of the confidence dimension of the SROL. Descriptive statistics for each of the subscales
are in Table 1 at both the subscale and item level. The assumptions of normality and sphericity were met due to the balanced nature of the design. No statistically significant difference among the subscales was evident, \( F(3, 348) = 1.186, p = 0.315 \) (see Table 5).

Descriptive statistics (Table 1) indicate that the average student views themselves as being between somewhat and very confident for each of the subscales at both the subscale and item level with the exception of “Stay on task and avoid distractions while studying” \( (\mu = 3.894) \) in the Time Management subscale and “Ask classmates for support \( (\mu = 3.938) \) in the Communication Competency subscale.

**Table 5**

**RM ANOVA for Confidence Dimension**

<table>
<thead>
<tr>
<th>Cases</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidence</td>
<td>0.615</td>
<td>3</td>
<td>0.205</td>
<td>1.186</td>
<td>0.315</td>
<td>0.010</td>
</tr>
<tr>
<td>Residuals</td>
<td>60.155</td>
<td>348</td>
<td>0.173</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Type III Sum of Squares*

**Research Question Three**

Is there a discrepancy in what students perceive as important and what they perceive themselves confident in?

Four one-way repeated measures ANOVAs were conducted on the two dimensions of the SROL. Descriptive statistics for each of the subscales are in Table 1 at both the subscale and item level. Model results for each of the subscales are in Table 6.
The assumptions of normality and sphericity were met due to the balanced nature of the design. A statistically significant difference among the dimensions was evident for the online student attributes subscale, $F(1, 116) = 10.325, p = 0.002$, as well as the time management subscale $F(1, 116) = 14.568, p < 0.001$. A moderate to moderately-large effect size was evident for both subscales, $\eta^2 = 0.082$ and $\eta^2 = 0.112$, respectively. Given the sample size of $n=117$, statistical significance would be detected for small effect sizes, $\eta^2 > .026$. Descriptive plots for the online student attributes (Figure 11) and time management (Figure 12) models indicate for both subscales, the students perceive themselves to be less confident than how important they view that subscale for success in an online learning environment.

Table 6

Repeated Measures ANOVAs

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Student Attributes</td>
<td>1.510</td>
<td>1</td>
<td>1.510</td>
<td>10.325</td>
<td>0.002*</td>
<td>0.082</td>
</tr>
<tr>
<td>Residuals</td>
<td>16.970</td>
<td>116</td>
<td>0.146</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Management</td>
<td>3.398</td>
<td>1</td>
<td>3.398</td>
<td>14.568</td>
<td>&lt;.001*</td>
<td>0.112</td>
</tr>
<tr>
<td>Residuals</td>
<td>27.062</td>
<td>116</td>
<td>0.233</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication Competency</td>
<td>0.657</td>
<td>1</td>
<td>0.657</td>
<td>3.647</td>
<td>0.059</td>
<td>0.030</td>
</tr>
<tr>
<td>Residuals</td>
<td>20.903</td>
<td>116</td>
<td>0.180</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technological Competency</td>
<td>0.186</td>
<td>1</td>
<td>0.186</td>
<td>1.504</td>
<td>0.222</td>
<td>0.013</td>
</tr>
<tr>
<td>Residuals</td>
<td>14.354</td>
<td>116</td>
<td>0.124</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Figure 11: Descriptive plot showing the discrepancy in mean score for Online Student Attributes between the Importance and Confidence dimensions.

Figure 12: Descriptive plot showing the discrepancy in mean score for Time Management between the Importance and Confidence dimensions.

**Research Questions Four and Five**

*What demographic characteristics correlate to and interact with student perception of competency importance?*
What demographic characteristics correlate to and interact with confidence in online learning readiness?

Two factorial repeated measures ANOVAs were conducted on the two dimensions of the SROL instrument, with respect to various demographic characteristics (i.e. gender, region, school, degree-level, and OECD status), for the online student attributes and time management subscales. No significant interaction was found between any of the nominal or ordinal variables and the dependent variables.

Pearson’s correlations between the dependent variables and continuous independent variables were calculated. Significant correlations between the dependent and continuous independent variables are presented in Table 7. Results indicated GDP per capita ppp as well as internet users % per capita had significant correlations with all four subscales and across both dimensions. Correlations ranged in effect size between small and moderate. Age, number of years in the US, and number of previous university-level online classes did not present significant correlations with any of the dependent variables.
Table 7

*Significant Pearson’s Correlations for Continuous Variables*

<table>
<thead>
<tr>
<th>Dimension and Subscale</th>
<th>Variable</th>
<th>Pearson’s $r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance: Online Student Attributes</td>
<td>GDP Per Capita PPP&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.310***</td>
</tr>
<tr>
<td></td>
<td>Internet Users % Per Capita&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.340***</td>
</tr>
<tr>
<td>Confidence: Online Student Attributes</td>
<td>GDP Per Capita PPP&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.270**</td>
</tr>
<tr>
<td></td>
<td>Internet Users % Per Capita&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.269**</td>
</tr>
<tr>
<td>Importance: Time Management</td>
<td>GDP Per Capita PPP&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.296**</td>
</tr>
<tr>
<td></td>
<td>Internet Users % Per Capita&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.356***</td>
</tr>
<tr>
<td>Confidence: Time Management</td>
<td>GDP Per Capita PPP&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.194*</td>
</tr>
<tr>
<td></td>
<td>Internet Users % Per Capita&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.194*</td>
</tr>
<tr>
<td>Importance: Communication Competency</td>
<td>GDP Per Capita PPP&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.352***</td>
</tr>
<tr>
<td></td>
<td>Internet Users % Per Capita&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.312***</td>
</tr>
<tr>
<td>Confidence: Communication Competency</td>
<td>GDP Per Capita PPP&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.315***</td>
</tr>
<tr>
<td></td>
<td>Internet Users % Per Capita&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.249**</td>
</tr>
<tr>
<td>Importance: Technical Competency</td>
<td>GDP Per Capita PPP&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.206*</td>
</tr>
<tr>
<td></td>
<td>Internet Users % Per Capita&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.274**</td>
</tr>
<tr>
<td>Confidence: Technical Competency</td>
<td>GDP Per Capita PPP&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.368***</td>
</tr>
<tr>
<td></td>
<td>Internet Users % Per Capita&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.366***</td>
</tr>
</tbody>
</table>

* $p < .05$, ** $p < .01$, *** $p < .001$

<sup>a</sup> indicates a small to somewhat moderate effect size $0.02 \leq r^2 < 0.13$

<sup>b</sup> indicates a moderate effect size $0.13 \leq r^2 < 0.26$

**Conclusion**

Descriptive statistics, repeated measures ANOVAs, and Pearson’s correlation coefficients were used to address the five research questions. Research question one examined which competencies international students considered important for online learning. Data revealed that all subscales and items are viewed as somewhat to very
important, with online student attributes having the highest mean score (higher is more important). Research question two examined international students’ perceptions of their confidence in their readiness for online learning in the subscales. Data revealed that students viewed themselves as being somewhat to very confident in all subscales overall. However, for two items (staying on task and asking classmates for support) students perceived themselves as being neither confident nor unconfident to somewhat confident. Research question three hypothesized that there would be no statistically significant differences between the students’ perceptions of the importance and their confidence in the four subscales. The null hypothesis was rejected for online student attributes and time management, as the data revealed statistically significant differences in the students perceptions of importance and confidence in these subscales. However, the null hypothesis was not rejected for technical competency and communication competency as no significant difference was found. Research questions four and five examined which demographic variables correlated or interacted with perception of importance and confidence. Only GDP per capita ppp and internet users % per capita correlated with every subscale in both dimensions. No nominal or ordinal variables had significant interactions with the dependent variables. The next chapter will present a summary of the study, discussions, and conclusion.
CHAPTER 5
SUMMARY AND DISCUSSION

International students’ online learning readiness was explored by examining international students’ perceptions of importance of and confidence in four subscales: online student attributes, time management, technical competency, and communication competency. The aim was to better understand the areas in which international students deem important for online learning readiness and how they perceive themselves in those same areas, if there is a discrepancy between what they find important and how they perceive themselves, and what demographic characteristics correlate with these perceptions. This was accomplished through the administration of the Student Readiness for Online Learning assessment (Martin et al., 2020). The SROL is a forty item (in total) measure which asks students to rate their perception of importance and their confidence in the four subscales mentioned above. Each dimension presents the same twenty questions and scale (only substituting confidence for importance). A total of 219 responses were collected between November 12th, 2021 and February 6th, 2022. After filtering out incomplete and ineligible responses, 117 respondents remained.
Descriptive statistics, repeated measures ANOVAs, and correlation matrices were used to address the research questions.

Analyses revealed that students find all of the four subscales to be somewhat to very important, even at the item-level. Online Student Attributes was perceived to be the most important (based on the mean score). The same is, mostly, true for the perception of their confidence in each subscale. While students perceived themselves to be somewhat to very confident in all four subscales, there were two-items in which students perceived themselves to be between neither confident nor unconfident and somewhat confident. Though overall students had similar perceptions of importance and confidence, the Repeated Measures ANOVAs revealed statistically significant differences between the dimensions for both online student attributes and time management. In both cases, students perceived these scales to be have a higher importance than their current level of confidence. No significant interaction was found between any of the nominal or ordinal variables and the dependent variables. As for continuous variables, GDP Per Capita PPP and Internet Users % Per Capita were correlated with all dependent variables (and all negatively–i.e. as GDP or Internet Users increased, students perceived every subscale to be of less importance and themselves to be less confident). No other continuous variables correlated with the dependent variables.
Discussion

Results of this study were generally consistent with those conducted by Martin et al. (2020), Küsel et al. (2020), and Suryanti et al. (2021). Both Martin and colleagues and Suryanti and colleagues reported similar results for research questions one and two. The study from Küsel and colleagues differed in that the German students perceived each scale as less important and themselves as less confident than in the other studies, including this one. Regarding research question three, which sought to identify differences between the perception of importance and the perception of confidence was not examined in the same manner in the three previous studies. Those studies utilized the mean scores from the descriptive statistics to identify differences that may or may not have been statistically significant. As for the final two research questions which examine demographic impacts and correlations on the dependent variables, Küsel and colleagues (2020) did not examine the relationship between demographics and the dependent variables. Martin and colleagues (2020) found significant differences between white and non-white students (which the present study does not address), current university course format (which the present study does not address), as well as significant correlations for age and number of online courses. The results of the present study are not consistent with these prior findings. Suryanti and colleagues (2021), unlike Martin et al. and the present study, found significant differences between males and
females. Previous studies examined neither GDP per capita ppp nor internet users % per capita.

**Implications for Policy and Practice**

Given the steady rise of international students in the United States and the rapid growth of blended and online learning in higher education, it is crucial that colleges and universities be able to identify and meet the needs of this unique population. As the top destination for students studying outside their home country, institutions in the U. S. are in a position to demonstrate how to enact policies and support structures that can be tuned to group and individual needs.

The results of this study indicate negligible differences among different demographic groups based on country of origin, gender, academic level, major, marital status, age, etc. This suggests that policies and support structures applied broadly to a group of students would be, generally, equally effective across different populations. Additionally, responses regarding the perceived importance of the items and subscales all being between somewhat and very important indicates the accuracy of the identified items. Moreover, for time management and online student attributes, students perceived themselves as being somewhat inadequate compared to how they perceived those scales. This presents a good opportunity for institutions to integrate scaffolding into the coursework to help develop these skills. Given that there were no significant differences based on academic level, it would be inadequate to simply enact these
policies for incoming or new students. Results of this study imply that all students can make use of additional support structures.

Though various learning management systems, which are commonly employed by higher education institutions, have similarities, institutions should ensure that instruction and support are integrated into the curriculum for the specific system in use at their institution. Moreover, as indicated by previous research, one of the biggest factors impacting learning outcomes in online and blended learning classrooms is faculty training. It is simply insufficient to instill programs and practices that teach students how to engage and learn effectively in a blended classroom only to have them hampered by inadequate faculty (see Appana, 2008; Bawa, 2016).

It is the recommendation of this researcher that the results of this study be utilized as a framework to develop two programs. One: the subscales of online student attributes and time management should be used to develop both a preparation course (likely embedded in to first-year seminar courses) and scaffolding within all courses (i.e. within a Universal Design for Learning methodology (see Couillard & Higbee, 2018; Damiani & Harbour, 2015; Pearson & Boskovich, 2019; Terras et al., 2015; Universal Design for Learning Center, 2020)) to continue to hone these important skills. This preparation and cultivation method is essential for developing and maintaining the skills students need to succeed, especially when most courses are blended learning environment (see Picciano, 2017). Two: the technical and communication competency
subscales should be used to develop a skills assessment and training modules (for students, faculty, and administrative support staff). This assessment and these trainings should not be one of the common, unvalidated, and generic examples mentioned previously. It should be developed within the context of the institution where it will be used to help increase online learning readiness. Of course, with this as well, there should be support structures and scaffolding (again, for students, faculty, and support staff) at every step of the way.

**Limitations**

The results of this study does have some limitations that must be acknowledged. First, the researcher underestimated the potential for misunderstandings regarding the demographic question items. As such many potential responses had to be discarded (see Chapter 4). Additionally, the small to somewhat moderate effect size for the first two research questions limits what we can reasonably infer from the data. Another limitation is that the SROL only examines perception of importance and confidence, it does not utilize course outcome data to measure student success. In other words, it reports what the students perceive to be important, but does not measure the impact of perceived confidence of the in the items in the subscales. While the theoretical background implies that perception of confidence leads to readiness, we do not have empirical evidence from this study to support that notion. A pre-test/post-test design (such as a Solomon four-group design) that measures student perceptions before and
after an online or blended learning course (as well as a control, non-online/non-blended course) could provide valuable insight in the impact of these perceptions. This study used quantitative methods to examine perceptions of importance and confidence for online learning readiness; however, the experiences of the individual students were not examined. Qualitative inquiry into these lived experiences could provide important insight into why students have the perceptions they do. Finally, this study focuses only on the perceptions of the students and does not measure faculty perceptions. As noted, faculty buy-in is a crucial element to student success in the blended learning classroom. While it was not the priority of this study to examine faculty perception, this would be a beneficial contribution to the literature.

**Future Research**

The results of this study are a valuable addition to the literature, since the perception of importance and confidence in online learning readiness among international students has not previously been examined. Additionally, the results confirm several outcomes of previous studies using the SROL. As noted in the limitations sections, broad opportunities are available for future study.

First, future studies should include larger samples. Moreover, future studies could utilize a mixed methods approach to follow up on why the students assign their ratings as they do and what they perceive as barriers to online learning readiness. In
addition, their perspective on online learning readiness gaps will provide valuable insight to researchers, administrators, faculty, and support staff.

Second, a study examining faculty perceptions of importance and confidence and compared to those of the students within their institutions would be interesting and informative. As noted, faculty preparedness and buy-in have significant impacts on learning readiness. It would also be interesting to see how these perceptions differ across different types of institutions.

Third, examining perceptions and online learning readiness along with student learning outcomes in online and blended learning classrooms will give valuable insight into how accurate student perceptions are. Using a Solomon four-group design would account for pre-test influence and also allow the researcher to examine whether or not these perceptions change after participating in an online or blended learning course. A similar study examining perceptions and online learning readiness along with participation in various preparedness programs would be beneficial into understanding how student perceptions change as they, presumably, become more adept in the skills needed to succeed in an online or blended learning environment.

Finally, given the difficulties with the second- and third-level digital divide, a study should be developed that examines how these inequities affect academic learning and course outcomes. van Deursen and van Dijk (2019) noted the “most observed personal categories affecting Internet access are gender, age, and ethnicity” (p. 359). Just
like other students, perhaps more so, international students represent the breadth of these categories. Understanding the ongoing and changing influence of the digital divide is critical for addressing the issue of online learning readiness.

While this study has focused on student perceptions of importance and confidence in online learning readiness, researcher, practitioners, and administrators must continue to investigate the impact of these perceptions, other factors affecting learning readiness and academic outcomes, and the needs of international students in the online or blended learning classroom as well as pursuing a better understanding of the needs and lived experiences of international students in the online and blended learning setting.

**Conclusion**

Institutions of higher learning have strong economic motivations to pursue increased international student enrollment (Cudmore, 2005; Kelly, 2012) as well as online and blended learning (Appana, 2008). Given these incentives, it is likely that higher education institutions in the U.S. will continue to host growing numbers of international students. Similarly, blended learning is now a part of nearly every higher education classroom (Picciano, 2017). This study investigated international students in the U.S.’s perceptions of importance and confidence across four subscales of online learning readiness utilizing the student readiness for online learning instrument developed by Martin and colleagues (2020). Overall, the data aligned with previous
studies on U.S. students, German students, and Indonesian students. As perceptions of online learning readiness has never before been examined, this study provides valuable insight into what students perceive to be important for online learning, how confident they view themselves on those same items, if there is a difference between what they perceive as important and their confidence, and what demographic factors correlate with perceptions of importance and confidence. These results can help institutions better develop online learning preparedness programs. As a public good, it is important of higher education institutions to meet students where they are and support them throughout their journey. As such, faculty and administrative support staff must make concerted efforts at learning and addressing the needs of students (in addition to developing their own online learning preparedness) as they begin and progress through their programs. While this study broadens the literature in a significant way, there is still much more to learn about international students and their online learning readiness.
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APPENDICES
Appendix A Application for Institutional Review Board Approval

IRB Exempt Determination of 22x-108

irb@olemiss.edu <irb@olemiss.edu>
Thursday, 11/11/2021 1:41 PM
To: Brandon Stewart McLeod <bsmcleod@olemiss.edu>
Cc: KB Melear <kbm@go.olemiss.edu>

This is to inform you that your application to conduct research with human participants, “Online Learning Readiness Among International Students” (Protocol #22x-108), has been determined as Exempt under 45 CFR 46.101(b)(2). You may proceed with your research.

Please remember that all of The University of Mississippi’s human participant research activities, regardless of whether the research is subject to federal regulations, must be guided by the ethical principles in The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research.

It is especially important for you to keep these points in mind:

• You must protect the rights and welfare of human research participants.

• Any changes to your approved protocol must be reviewed and approved before initiating those changes.

• You must report promptly to the IRB any injuries or other unanticipated problems involving risks to participants or others.

• If research is to be conducted during class, the PI must email the instructor and ask if they wish to see the protocol materials (surveys, interview questions, etc.) prior to research beginning.

If you have any questions, please feel free to contact the IRB at irb@olemiss.edu.

IRB Administrative Office
Research Integrity and Compliance
Office of Research and Sponsored Programs
The University of Mississippi
100 Barr Hall
University, MS 38677-1848
irb@olemiss.edu | www.olemiss.edu

Please Note:

• Please be aware that new materials (protocols, amendments, progress reports) need to be submitted via our new online portal: Submit an IRB Protocol | Research, Scholarship, Innovation, and Creativity (olemiss.edu)

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REMEMBER: YOU CANNOT HAVE CONTACT WITH RESEARCH SUBJECTS UNTIL YOU RECEIVE THE FORMAL IRB PROTOCOL APPROVAL LETTER OR EMAIL.
Appendix B A copy of the Survey Instrument

Introduction

Q1.1.

Consent to Participate in Research

Study Title: Online Learning Readiness Among International Students

Investigator
Brandon McLeod
International Student & Scholar Services
331 Martindale-Cole Hall University, MS 38677
(662) 915-7404
bsmcled@olemiss.edu

Faculty Sponsor
Kerry Brian Melear, Ph.D
Department of Higher Education
107 Guyton Hall University, MS, 38677
(662) 915-5016
kbm@olemiss.edu
Q1.2.
Description
The purpose of this research project is to examine the online learning readiness of international students in the U.S. We would like to ask you about how you perceive the importance of and your confidence in various factors that affect online learning readiness. You will not be asked for your name or any other identifying information. The survey will take approximately 7 minutes to complete.
U.S. Citizens are not eligible to participate.

Q1.3. Confidentiality
No identifiable information will be recorded, therefore we do not think you can be identified from this study.

Q1.4. Benefits from your participation and Incentives
You should not expect benefits from participating in this study. However, you might experience satisfaction from contributing to scientific knowledge. Moreover, answering the survey questions might make you more aware of areas in which you would like to improve your online learning readiness.
For every participant $1 will be donated to the Scholars At Risk Network. Additionally, each participant who completes a second survey (available upon completion of this survey) will be entered into a raffle for a $100 Amazon gift card.
Q1.5. Right to Withdraw
You do not have to volunteer for this study, and there is no penalty if you refuse or withdraw. If you start the study and decide that you do not want to finish, just exit out of the survey.

Q1.6. IRB Approval
This study has been reviewed by The University of Mississippi’s Institutional Review Board (IRB). If you have any questions, concerns, or reports regarding your rights as a participant of research, please contact the IRB at (662) 915-7482 or irb@olemiss.edu.

Q1.7. Helpful Definitions
Asynchronous - not at the same time (for example, using an online discussion board that can be accessed at any time)
Synchronous - at the same time (for example, a live video lecture where you can interact in real time)
Learning Management System - a web-based platform where course materials, assignments, and tests may be accessed (for example, Blackboard, Canvas, Moodle, Sakai, etc.)

Q1.8. Please check the box below to certify that you are 18 years of age or older.

☐ I certify that I am 18 years of age or older
Q1.9. Please check the box below to certify that you are a currently enrolled international student (non-U.S. citizen) in the United States.

☐ I certify that I am a currently enrolled international student.

Q1.10. Statement of Consent

I have read and understand the above information. By completing the survey, I consent to participate in the study.

Importance

Q2.1. Please respond to the following statements regarding how important they are for online learning

<table>
<thead>
<tr>
<th>Be self-disciplined with studies</th>
<th>Not important at all</th>
<th>Unimportant</th>
<th>Neither important nor unimportant</th>
<th>Somewhat important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Learn from a variety of

https://aodmississippi.ca1.qualtrics.com/Q/EditSection/Blocks/Ajax/GetSurveyPrintPreview?ContextSurveyID=SV_7a0x1UP3y3jGdLQb&ContextLibraryId=UR_9...
Q2.2. Please respond to the following statements regarding how important they are for online learning

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not important at all</th>
<th>Unimportant</th>
<th>Neither important nor unimportant</th>
<th>Somewhat important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stay on task and avoid distractions while studying</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Utilize course schedule for due dates</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Meeting Multiple Deadlines for course activities</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Complete course activities/assignments on time</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Devote hours per week regularly for the online</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q2.3. Please respond to the following statements regarding how *important* they are for online learning

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not important at all</th>
<th>Unimportant</th>
<th>Neither important nor unimportant</th>
<th>Somewhat important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss feedback received (assignments, quizzes, discussion, etc.) with the instructor</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Use asynchronous technologies (discussion boards, email, etc.)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Use synchronous technologies (Zoom, Collaborate, Adobe Connect, Webx, etc.) to communicate</td>
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<tr>
<td>Ask the instructor for help via email, discussion board, or chat</td>
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<tr>
<td>Ask classmates for support (accessing the course, clarification on a topic)</td>
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</tbody>
</table>

Q2.4. Please respond to the following statements regarding how *important* they are for online learning

https://aodmsissippi.ca1.qualtrics.com/Q/EditSection/Blocks/Ajax/GetSurveyPrintPreview?Context=SurveyId=SV_7dOeUP3jQjGk&ContextLibraryId=EUR_9... 6/13
Navigate through the course in the Learning Management System (e.g. Blackboard, Moodle, Canvas, etc.)

<table>
<thead>
<tr>
<th>Not important at all</th>
<th>Unimportant</th>
<th>Neither important nor unimportant</th>
<th>Somewhat important</th>
<th>Very important</th>
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<tbody>
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<td>○</td>
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</table>

Access the online grade book for feedback on performance

<table>
<thead>
<tr>
<th>Not important at all</th>
<th>Unimportant</th>
<th>Neither important nor unimportant</th>
<th>Somewhat important</th>
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Participate in course activities (discussions, quizzes, assignments, synchronous sessions)

<table>
<thead>
<tr>
<th>Not important at all</th>
<th>Unimportant</th>
<th>Neither important nor unimportant</th>
<th>Somewhat important</th>
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Access online help desk/tech support for assistance.

<table>
<thead>
<tr>
<th>Not important at all</th>
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Complete basic computer operations (e.g. creating and editing documents, managing files and folders)

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<thead>
<tr>
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</table>

Confidence

Q3.1. Please respond to the following statements regarding how confident you are for each item in regards to online learning

Be self-disciplined with studies

<table>
<thead>
<tr>
<th>Not confident at all</th>
<th>Somewhat unconfident</th>
<th>Neither confident nor unconfident</th>
<th>Somewhat confident</th>
<th>Very confident</th>
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Set goals with deadlines

<table>
<thead>
<tr>
<th>Not confident at all</th>
<th>Somewhat unconfident</th>
<th>Neither confident nor unconfident</th>
<th>Somewhat confident</th>
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<tr>
<td>Q3.2. Please respond to the following statements regarding how confident you are for each item in regards to online learning</td>
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<tr>
<td><strong>Learn from a variety of formats (Lectures, videos, podcasts, online discussion/conferencing)</strong></td>
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<tr>
<td>Not confident at all</td>
<td>Somewhat unconfident</td>
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<td>Be capable of following instructions in various formats (written, video, audio, etc.)</td>
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<td>Utilize additional resources to answer course-related questions (course content, assignments, etc.)</td>
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<tr>
<td><strong>Utilize course schedule for due dates</strong></td>
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<td>Somewhat unconfident</td>
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<tr>
<td><strong>Stay on task and avoid distractions while studying</strong></td>
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<tr>
<td>Not confident at all</td>
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<tr>
<td><strong>Devote hours per week regularly for the online class</strong></td>
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<tr>
<td>Not confident at all</td>
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<tr>
<td><strong>Complete course activities/assignments on time</strong></td>
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</tbody>
</table>
Q3.3. Please respond to the following statements regarding how confident you are for each item in regards to online learning

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not confident at all</th>
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<td>Ask classmates for support (accessing the course, clarification on a topic)</td>
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<td>Use synchronous technologies (Zoom, Collaborate, Adobe Connect, WebEx, etc.) to communicate</td>
<td></td>
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</tr>
<tr>
<td>Discuss feedback received (assignments, quizzes, discussion, etc.) with the instructor</td>
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<tr>
<td>Use asynchronous technologies (discussion boards, email, etc.)</td>
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</tr>
<tr>
<td>Ask the instructor for help via email, discussion board, or chat</td>
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</tbody>
</table>

Q3.4. Please respond to the following statements regarding how confident you are for each item in regards to online learning
### learning

<table>
<thead>
<tr>
<th>Not confident at all</th>
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<td>○</td>
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</tbody>
</table>

### Demographic Information

**Q4.1. Age**

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https://ao@misisissippi.ca1.qualtrics.com/.qualtrics.com/22/Blocks/Ajax/GetSurveyPrintPreview?ContextSurveyID=sV_7a0oxUISp3G1LQs&ContextSurveyID=E4R_9n3... 10/13
Q4.2. Country of Citizenship
(U.S. citizens are ineligible)

Q4.3. Country of Birth

Q4.4. Current Degree Level

- Associate's
- Bachelor's
- Master's
- Doctoral (including Law and Pharmacy)
- Other

Q4.5. Academic Major (e.g. Finance, Pharmacy, Education, Engineering, etc.)
Q4.6. U.S. State/Territory where your college/university is located

State

Q4.7. Number of university-level online courses taken previously

Q4.8. Current Visa Type

Q4.9. Marital Status

- Never married
- Married
- Separated
- Divorced
- Widowed
Q4.10. Number of years in the U.S.

Q4.11. Gender

- Male
- Female
- Non-binary / third gender
- Prefer not to say

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Appendix C CITI Collaborative Institutional Training Initiative

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Brandon McLeod (ID: 4460402)
- **Institution Affiliation:** University of Mississippi - Oxford (ID: 542)
- **Institution Email:** bsmcleod@olemiss.edu
- **Institution Unit:** School of Education
- **Phone:** 66291571404

- **Curriculum Group:** Human Research
- **Course Learner Group:** Group 3A SBR Graduate Students at the University of Mississippi.
- **Stage:** Stage 2 - Refresher Course
- **Description:** SBR Graduate Students at the University of Mississippi. Complete all required modules and associated quizzes.

- **Record ID:** 31943707
- **Completion Date:** 23-Sep-2021
- **Expiration Date:** 22-Sep-2024
- **Minimum Passing:** 80
- **Reported Score:** 95

### REQUIRED AND ELECTIVE MODULES ONLY

<table>
<thead>
<tr>
<th>Module Description</th>
<th>Date Completed</th>
<th>Score</th>
</tr>
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<tbody>
<tr>
<td>SBE Refresher 1 - Instructions (ID: 943)</td>
<td>23-Sep-2021</td>
<td>No Quiz</td>
</tr>
<tr>
<td>SBE Refresher 1 - History and Ethical Principles (ID: 936)</td>
<td>23-Sep-2021</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>SBE Refresher 1 - Federal Regulations for Protecting Research Subjects (ID: 937)</td>
<td>23-Sep-2021</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>SBE Refresher 1 - Informed Consent (ID: 938)</td>
<td>23-Sep-2021</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>SBE Refresher 1 - Defining Research with Human Subjects (ID: 15029)</td>
<td>23-Sep-2021</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>SBE Refresher 1 - Privacy and Confidentiality (ID: 15035)</td>
<td>23-Sep-2021</td>
<td>4/4 (100%)</td>
</tr>
<tr>
<td>SBE Refresher 1 - Assessing Risk (ID: 15034)</td>
<td>23-Sep-2021</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>SBE Refresher 1 - Research with Prisoners (ID: 939)</td>
<td>23-Sep-2021</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>SBE Refresher 1 - Research with Children (ID: 15036)</td>
<td>23-Sep-2021</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>SBE Refresher 1 - Research in Educational Settings (ID: 940)</td>
<td>23-Sep-2021</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>SBE Refresher 1 - International Research (ID: 15029)</td>
<td>23-Sep-2021</td>
<td>1/2 (50%)</td>
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</table>

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/7b84756001-2bae-4dc0-8498-9ed1f9f38b7-31943707

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-520-9829
Web: https://www.citiprogram.org
**NOTE:** Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Brandon McLeod (ID: 4460402)
- **Institution Affiliation:** University of Mississippi - Oxford (ID: 542)
- **Institution Email:** bmcleod@olemiss.edu
- **Institution Unit:** School of Education
- **Phone:** 6015157140

- **Curriculum Group:** Human Research
- **Course Learner Group:** Group 3A SBR Graduate Students at the University of Mississippi.
- **Stage:** Stage 2 - Refresher Course
- **Description:** SBR Graduate Students at the University of Mississippi. Complete all required modules and associated quizzes.

- **Record ID:** 31943707
- **Report Date:** 22-Feb-2022
- **Current Score**: 100

### REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES

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<tr>
<td>SBE Refresher 1 – International Research (ID: 15028)</td>
<td>23-Sep-2021</td>
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Verify at: [www.citiprogram.org](http://www.citiprogram.org)/verify?k84756001-2bea-4498-8ec01ff93eb7-31943707

Collaborative Institutional Training Initiative (CITI Program)
- **Email:** support@citiprogram.org
- **Phone:** 888-529-5929
- **Web:** [https://www.citiprogram.org](http://https://www.citiprogram.org)
Brandon McLeod attended Spring Hill College, where he completed a Bachelor of Arts degree in English, with minors in French and Philosophy, in 2007. He went on to attend the University of South Alabama, completing a Master of Arts in English in 2009 under the supervision of Alabama Poet Laureate Emeritus, Professor Sue Brannan Walker. After teaching English to speakers of other languages both in the United States and Japan, he completed a Master of Arts in Teaching Languages in 2016 at the University of Southern Mississippi, supervised by Professor Christopher Miles.

In 2015 he began working in international student, faculty, and scholar advising at the University of Mississippi. He is an active member of NAFSA Association of International Educators, including being a NAFSA Trainer Corps Trainer and Ambassador as well as a Poster Fair Organizer. At the state level, he is a Board Member and the Student Services Representative for the Mississippi Association of International Educators/StudyMississippi. He has presented at numerous state, regional, and national international education conferences as well as served as an invited panelist for the 2019 Rival’s Retreat Career Services Conference.

Brandon serves as a reviewer for these journals: Journal of Campus Activities Practice and Scholarship, Internationalisation of Higher Education – Policy and Practice,
SN Social Sciences, and Journal of Comparative & International Higher Education. He is also an active member of Phi Kappa Phi, Phi Beta Delta, Omicron Delta Kappa, Association of North America Higher Education International, and Early Career Higher Education Researchers.

In 2021, he became licensed to administer the Intercultural Development Inventory. In February 2022, his chapter, *Overview of Post-baccalaureate Student Needs*, co-authored with Dr. George S. McClellan, was published in Shepard, P. & Perry, A. (Eds) “A Practitioner’s Guide to Supporting Graduate and Professional Students”.