Policies and best practices in addressing digital equity gaps: A multisite case study of leaders within a community college system

by

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AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

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College of Education

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Manhattan, Kansas

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Abstract

This qualitative multisite case study examined the policies and best practices adopted by a large, urban community college system to recognize and address digital equity gaps. Guided by Feenberg's critical theory of technology and Resta and Laferrière's five dimensions of digital equity, the study explored how leaders operationalized asset-based approaches to support students, particularly those from low-income, first-generation, and underrepresented backgrounds. Data were collected through document analysis and semi-structured interviews with 21 leaders representing executive administration, faculty, student services, and information technology. Coding and thematic analysis revealed six overarching themes: (a) digital equity practices guided by policies, (b) finding and meeting needs, (c) connecting students to resources, (d) technology as a tool to increase access, (e) student-focused multidisciplinary decision making, and (f) lessons learned from the COVID-19 global pandemic. Seven promising practices emerged, including a laptop loan program, a PC repair lab, embedded success coaches, mobile success librarians, community-based technology courses, community partnerships for technology access, and a digital equity rubric for course design. Findings indicated that intentional, policy-aligned practices, coupled with cross-functional collaboration, enhanced students' access to technology and related support.

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Chapter 1 - Introduction

Community colleges have historically provided open access to a diverse student population and embraced the U.S. idea that education is the key to transitioning from poverty into the middle class (Milliron & O'Brien, 2019). For community colleges, technology has long been considered essential for access; however, early technology implementation often focused on convenience and later shifted to improving outcomes.

Milliron and O'Brien (2019) described technology as "crashing waves" that community colleges are "swimming in" (p. 234). Technology has become part of the everyday workflow across most departments in community colleges. Technology continues to change rapidly, creating the need for constant decision making. Milliron and O'Brien (2019) stated, "When exploring new technology, community colleges have been more than willing to try, test, and share more so than other sectors" (p. 233). Implementing new technology can be expensive, and making the wrong decision can be detrimental; however, colleges that wait for technology to stabilize can risk losing student enrollment or being left behind compared to other community colleges. Roueche et al. (2008) described this challenge as the "shopper mentality" (p. 21) in that students are consumers who compare services offered by community colleges.

Technology in higher education is often implemented for one of three reasons: (a) to improve current practices, (b) to make current practices more affordable, and (c) to reinvent current practices (LeBlanc, 2015). Because each community college has unique needs, each college chooses to implement and use technology in various ways. However, the COVID-19 global pandemic resulted in an unprecedented rapid shift to online instruction for community college students (Prokes & Housel, 2021). The COVID-19 virus was first identified in late 2019; by March of 2020, it resulted in over 26,000 deaths worldwide (Huang et al., 2020). Due to this

worldwide outbreak, 46 countries announced school and university closures. Statewide lockdowns occurred in 48 of the 50 U.S. states, Washington D.C., and all five U.S. territories (Chavez & Moshtaghian, 2020). Although this shift was necessary to respond to a public health crisis, emergency remote teaching differs from well-designed and equitable online instruction (Hodges et al., 2020).

The COVID-19 global pandemic forced a technology shift in education (Bray, 2021). Not only did classes shift to an online modality, but many other student services also had to find creative ways to serve students. The pandemic highlighted basic needs and insecurities, including access to technology, for many community college students (The Hope Center for College, Community, and Justice, 2021).

Statement of the Problem

The COVID-19 global pandemic exacerbated the digital divide's significance in health and education (Fishman & Nguyen, 2021). Nearly 20% of community college students who quit attending during the pandemic reported doing so due to a lack of access to technology (Fishman & Nguyen, 2021). Students who identified as being from a minority group, were low income, or were from a rural area were more likely to have technology access issues.

O'Banion (1997) described technology as both a "magic bullet" and a "broken arrow" (p. 63) and concluded "technology has yet to fulfill its promise to improve education or to improve instructional productivity, but there is mounting evidence that the promise will be kept" (p. 67). Yet, the digital divide continues to widen, and new divides continue to emerge as technology advances over time. The digital divide is a deficit-focused ideology that often focuses on specific marginalized individuals or groups.

When considering challenges in addressing the digital divide or plans to bridge this divide, much of the existing literature has used a deficit-thinking approach (Gorski, 2016). Deficit thinking involves implicit bias that blames students and avoids systemic approaches to addressing inequities (Valencia, 2010). This thinking is apt to contribute to solutions that attempt to fix students. For students from low socioeconomic status backgrounds, deficit thinking has contributed to the idea that lower wages, life expectancy, and educational attainment are somehow rooted in a "culture of poverty" (Valencia, 2010, p. 13) or a way of life. Conversely, asset-based thinking is the "antidote to the pervasive deficit and delimiting views of school, learning, and teaching" (Flint & Jaggers, 2021, p. 261). Using this approach, poverty is not used as an excuse, and students and communities are not viewed as needing to be fixed (Lindsey et al., 2010). Asset-based thinking not only focuses on how to improve the lives of students (Valencia, 2010) but also on how students are perceived and valued (Freire, 1970/2018).

In 2021, an estimated 8.9 million students were enrolled in U.S. community colleges (Community College Research Center, n.d.). Community colleges actually serve a much larger student population because federal data do not include the students from over 100 community colleges that offer bachelor's degrees (Community College Research Center, n.d.). Of the students included in federal data on community colleges, 65% live in households with an average annual income of less than $50,000. Further, 35% of this student population lives in households with an average annual income of less than 20,000 (Community College Research Center, n.d.). Community colleges work to serve this student population. Before the COVID-19 global pandemic, community colleges faced challenges in funding the rapidly changing technology needs of students. Federal dollars provided during the pandemic helped community colleges

update technology infrastructures and assist students, but these funds are no longer available (Kisker et al., 2023).

Background of the Problem

Community colleges serve a vital role by contributing to the economy, training the workforce, and preparing students academically for transfer to 4-year institutions (Bailey et al., 2015). Each community college has a unique mission, vision, community needs, and student demographics; however, the underlying goal for all community colleges is to serve students. Bailey et al. (2015) found that "a well-functioning community college system is instrumental in improving equity and in efficiently developing skills and talents essential for a thriving economy and society" (p. vii). Students without internet connectivity, up-to-date devices, or digital skills face significant challenges with access, enrollment, persistence, and completion in community colleges. The open-access mission of community colleges means students served often come from populations with limited access to resources and high-quality K–12 education (Roueche et al., 2008) who may also be first-generation college students (Mechur-Karp et al., 2020). Identifying first-generation college students is challenging in that students may not self-identify, and varied definitions exist. According to the Center for First Generation Students, 73% of community colleges in 2020 defined *first-generation student* as a student whose parents have yet to earn a 4-year degree. First-generation college students often lack informational support on how to navigate college and access resources (Westbrook & Scott, 2012).

The term *digital divide* was first mentioned in the 1990s by Lloyd Morrisett, who described it as the gap or lack of access between groups (van Dijk, 2017). Initially, this divide focused on a physical lack of access, such as a lack of internet access or hardware; however, this definition has evolved to include digital skills and use. In 2020, at least 18 million U.S. low-

income households did not have access to reliable internet (Digital US Coalition, 2020). At least 32 million Americans cannot use a computer, and at least one third of U.S. workers reported having limited or no digital skills as of 2020. Further, half of Americans reported not being comfortable using technology for learning. Despite the perception that most young adults have grown up immersed in technology, 58% of millennials (i.e., people born between 1981 and 1996) reported a lack of sufficient digital problem-solving skills in 2020.

When the digital divide is the issue, obtaining digital equity for students should be the goal (National Digital Inclusion Alliance [NDIA], n.d.). Digital equity efforts attempt to bridge gaps for students from underrepresented backgrounds. *Digital equity* means all students should have access to technology and the training to use technology appropriately (Fingal, 2023). During the COVID-19 global pandemic, students faced various technology-related challenges, including access to reliable broadband and hardware. During the pandemic, some colleges, such as Forsyth Technical Community College, a more urban community college, used federal funding to update Wi-Fi access across campus and opened up parking lot access to students (D'Amico et al., 2022). Wilkes Community College, a rural college, also provided hot spot access for students in campus parking lots and fire station parking lots. Both colleges also provided laptops for students. Further, students, faculty, and staff had to shift to online formats for not only classroom instruction but also other essential college services (e.g., advising) without proper training provided. Spokane Community College set up a virtual campus to provide students with access to resources such as advising and a virtual success coach (Bray, 2021).

Research on this type of digital gap began in the 1990s and is referred to as the first-level digital divide (Attewell, 2001). Counting the number of existing digital divides can be

overwhelming and discouraging. Digital divides exist across many student demographic factors, including gender, race, and socioeconomic status, and new divides are continuously identified as technology advances (Ragnedda, 2021). Further, access and usage increase with income and education (J. E. Katz & Rice, 2002).

Using technology has become inherent in education (Milliron & O'Brien, 2019). Computer use in community colleges began in the 1970s as a way to "manage student records, supplement course material, administer tests, and assess student progress" (Kisker et al., 2023, p. 219). In the community college setting, computer usage permeates nearly every task (Kisker et al., 2023). Face-to-face courses have digital components such as a learning management system (LMS) and supplemental course material. Further, technology is used in nonacademic areas of the college such as enrollment management and data analytics to measure student success. When community colleges adopt technology products for employees and students to use, they have many vendor options; however, institutions are limited in financial resources. Technology continues to change rapidly, which requires students and college employees to have continuing education and lifelong learning.

During the COVID-19 global pandemic, digital equity as a social justice issue came to the forefront because community colleges had to shift rapidly to remote learning to meet students' academic and nonacademic needs (Hart et al., 2021). This crisis forced community college leaders to rethink institutional processes such as technology plans, course delivery and instruction, and student support services. Leaders concerned for the health and safety of employees and students collected data on students' basic needs. The pandemic brought attention to students' basic needs, including technology insecurities (The Hope Center for College, Community, and Justice, 2021).

Technology is a basic need, and the digital divide has been well-documented in the literature (Ragnedda, 2021). Although ample literature exists on the digital divide (i.e., the gap between students with access to technology and those without), the best practices for community colleges to identify and address digital inequity are not well known.

Purpose of the Study

The purpose of this study was to investigate the policies and best practices adopted by community colleges to recognize and address the digital equity gap. This study focused on policies, practices, and leaders' perspectives at one community college with multiple sites that has been acknowledged for system-wide digital equity initiatives.

Research Questions

The following two research questions (RQs) guided this study:

1. What policies and best practices have been adopted by a community college to recognize and address digital equity gaps?
2. What are community college leaders' perspectives of the policies and best practices used to address digital equity gaps?

Theoretical and Conceptual Frameworks

Andrew Feenberg's critical theory of technology served as the theoretical framework of this study. Technology is "value laden" and "begins in the social world" (Kruger-Ross, 2013, p. 300). Grimes and Feenberg (2013) noted, "In critical theory of technology, technologies are viewed in terms of a larger system, a lifestyle, a collection of social values, meanings and cultural cues" (p. 4). The critical theory of technology argues human agency influences how technology is implemented and used (Feenberg, 2002). For this study, the theoretical framework served as the guide or "blueprint" (Grant & Osanloo, 2014, p. 13) on which the study was built.

An asset-based thinking approach was used to guide the exploration of how community college leaders recognized and responded to digital inequities. The five dimensions of digital equity served as the asset-based conceptual framework for this study (Resta & Laferrière, 2008):

- access to hardware, software, and connectivity to the internet
- access to meaningful, high-quality, and culturally relevant content in local languages
- access to creating, sharing, and exchanging digital content
- access to educators who know how to use digital tools and resources
- access to high-quality research on the application of digital technologies to enhance learning. (p. 768)

The theoretical and conceptual frameworks are described further in Chapters 2 and 3.

Alignment Table

Appendix A contains a table that displays the alignment of the study's purpose, RQs, conceptual and theoretical frameworks, literature findings, and interview questions.

Methodology

This qualitative study used a multisite case study approach to explore policies and best practices for addressing digital equity gaps in a single community college with multiple sites. Stake (2005) described a case study as "not a methodological choice, but a choice of object to be studied" (p. 443). The researcher used two sources of data: document analysis and semistructured interviews (Creswell, 2016). An analysis of archival documents, policies, and practices examined strategies used by leaders to address digital equity. Semistructured interviews with community college leaders from multiple sites in one system provided insight into leaders' perspectives on addressing digital equity through the lens of the theoretical and conceptual frameworks.

Delimitations and Assumptions

Delimitations are the defined boundaries chosen by researchers (Simon & Goes, 2013). The researcher used these defined boundaries to narrow and manage the study. This study was delimited to one community college system with multiple sites. The researcher further delimited the study to 21 leaders in this one system.

The researcher assumed identified participants would agree to be interviewed and would answer interview questions openly and honestly (Roberts & Hyatt, 2018). Additionally, the researcher assumed participants were interested in serving students and responses would be accurate and complete.

Significance of the Study

Gillett-Karam et al. (1991) stated, "Community colleges were established to redress the grievances brought about by the practices of elitist or meritocratic educational systems" (p. 6). The open access mission of community colleges continues to provide opportunities for students of diverse backgrounds, including those of low socioeconomic status. Although the internet and computer technology have the potential to increase educational access, technological advances can also create hidden barriers to student success (Roueche et al., 2008). Clarke (2017) stated, "Ensuring that all students flourish is critical to the health of the nation" (p. 10). This study was designed to inform the discussion of community college leaders' efforts to implement best practices to promote digital equity and address digital divides. It is hoped the results of this study will add to the body of knowledge and may inform practice and policy. Addressing digital equity gaps may provide insight into ways to improve student persistence and retention.

Definitions of Terms

In reviewing the literature, the following terms have sometimes been used interchangeably, despite having different meanings. These definitions are included to help provide clarity for their use in the current study. This study used the term "digital divide" and focused primarily on digital equity.

Achievement gap refers to outputs, or "the unequal or inequitable distribution of educational results and benefits" (The Glossary of Education Reform, 2013, para. 2).

Asset-based thinking "approaches to education begin with the recognition and appreciation of the student in their own environment" (Lindsey et al., 2010, p. 18). Using asset-based approaches, educators "identify and build on students' assets within the realms of our classrooms and schools" (Lindsey et al., 2010, p. 18).

Deficit-based thinking approaches "posits that students who fail in school do so because of alleged internal deficiencies (such as cognitive and/or motivational limitations) or shortcomings socially linked to the youngster - such as familial deficits and dysfunctions" (Valencia, 1997, p. xi).

Digital divide refers to "inequalities among individuals, households, and other groups of different demographics and socioeconomic levels in access to information and communications technologies" (Bray, 2021, p. 2). The digital divide has contributed to widening the knowledge divide for vulnerable groups.

Digital equity is a social justice goal that ensures equitable access to technology and the training to use technology appropriately (Resta & Laferrière, 2008).

Digital fluency "is the ability to leverage technology to create new knowledge, new challenges, and new problems and to complement these with critical thinking, complex problem solving, and social intelligence to solve the new challenges" (Sparrow, 2018, p. 54).

Digital inclusion "refers to the activities necessary to ensure that all individuals and communities, including the most disadvantaged, have access to and use of Information and Communication Technologies" (NDIA, n.d., p. 1).

Digital literacy is the "ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills" (NDIA, n.d., p. 1).

Opportunity gap "refers to inputs—the unequal or inequitable distribution of resources and opportunities" (The Glossary of Education Reform, 2013, para. 2).

Chapter Summary

Chapter 1 introduced the topic of digital equity. This chapter covered the statement of the problem, background of the problem, purpose of the study, RQs, theoretical and conceptual frameworks, an alignment table, methodology, delimitations and assumptions, significance of the study, and definitions of terms.

Organization of the Study

Chapter 1 introduced the study. Chapter 2 provides a literature review of themes and theoretical and conceptual frameworks to inform this study related to decisions and best practices for addressing digital equity gaps. Chapter 3 discusses the qualitative research methodology that was used to explore how community colleges addressed digital inequity. Chapter 4 includes an analysis and a description of the data findings. Chapter 5 provides an overview of the study,

implications related to the literature, practical implications, recommendations for future research, and conclusions.

Chapter 2 - Literature Review

The purpose of this study was to investigate the policies and best practices adopted by community colleges to recognize and address the digital equity gap. In this chapter, the literature review provides context relevant to the study and is organized by the following themes: literature search, the history of access and equity in community colleges, the persistent digital divide, the impact of the COVID-19 global pandemic on higher education, technology as a basic need, the divide by demographics (e.g., low socioeconomic students), the poverty ideology, deficit- and asset-based approaches, digital equity, and the theoretical and conceptual frameworks.

Literature Search

The researcher used Kansas State University (KSU) databases to search a vast body of literature from different disciplines related to digital equity. Databases included ProQuest Dissertations, Educational Resources Information Center, Education Full Text, Educators Reference Complete (i.e., Gale OneFile), SAGE, and Springer Link. Specific resources used in this literature review included dissertations, peer-reviewed journals, and textbooks.

History of Access and Equity in Community Colleges

Community colleges, previously named as junior colleges, trace their origins back to the Morrill Land Grant Act of 1862 (Drury, 2003). The Morrill Land Grant Act of 1862 provided over 10 million acres of formerly tribal lands to create educational opportunities in agricultural and mechanical arts for farmers (U.S. National Archives and Records Administration, 2022). The second Morrill Act of 1890 granted funds to the former confederate states to establish separate higher education institutions for Black students. The first community college in the United States, Joliet Junior College, was founded in 1901. During this time, research universities such as the University of Chicago and the University of Missouri created a movement to establish 2-year

colleges so these universities could focus on research and only accept the "truly gifted" (Drury, 2003, p. 2). Although some people considered the creation of community colleges an elitist movement, communities at the beginning of the 20th century had pride in building colleges that could provide education for all (Drury, 2003).

During the Great Depression (i.e., 1929–1939), community college education was viewed as an opportunity to promote social mobility for many out-of-work adults who lost their jobs during this period (Drury, 2003). By the 1930s, community colleges expanded their curriculum from general education to include vocational education. In 1944, the G.I. Bill of Rights provided educational access to more than 2 million veterans of World War II. In 1947, The Truman Commission Report recognized access to education was not equitable; rather, it was based on a student's ability to pay. The report stated:

> It is the community's responsibility, at the local, State, and National levels, to guarantee that financial barriers do not prevent any able and otherwise qualified young person from receiving the opportunity for higher education. There must be developed in this country the widespread realization that money expended on education is the wisest and soundest of investments in the national interest. The democratic community cannot tolerate a society based upon education for the well-to-do alone. If college opportunities are restricted to those in the higher income brackets, the way is open to the creation and perpetuation of a class society which has no place in the American way of life. (Gilbert & Heller, 2013, p. 23)

However, the equity goals of the Truman Commission would not begin to be enacted until the Higher Education Act of 1965 (Gilbert & Heller, 2013). During the 1960s and 1970s, enrollment in community colleges tripled due to veterans, minorities, women, individuals with disabilities,

and low-income individuals entering higher education to seek educational opportunities for the first time.

In 2022, nearly 1,200 community colleges served almost 12 million students (American Association of Community Colleges [AACC], n.d.). Modern community colleges provide open access to higher education. This open-access mission of community colleges minimizes financial, geographic, and social barriers for students of lower socioeconomic status, minoritized students, and students who are academically underprepared (Roueche & Roueche, 1993). Approximately 44% of all students in U.S. higher education are enrolled in community colleges annually (Community College Research Center, 2021). Further, an estimated 66% of all college students attend a community college at some point in their education (Community College Research Center, n.d.).

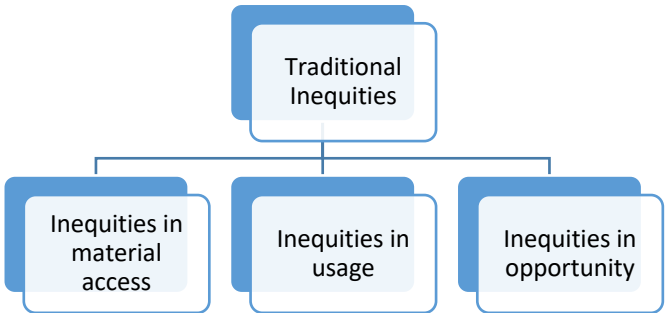
The Persistent Digital Divide

A persistent political myth is that Al Gore invented the internet in the 1990s (Kronenfeld & Kronenfeld, 2020). The reality is no one person can be credited with the invention of the internet. The Advanced Research Projects Agency was formed by former U.S. President Dwight D. Eisenhower in response to the fear of Soviet attacks on phone lines during the Cold War era (History.com Editors, 2019). The Advanced Research Projects Agency was tasked with creating a network of computers that would allow for government communication in the absence of phones. In the 1970s, the first internet protocol was invented. By the 1990s, the World Wide Web was introduced. The High-Performance Computing Act of 1991 was passed as the U.S. government decided the internet could be used for commercial purposes, and the internet began to be privatized (Kronenfeld & Kronenfeld, 2020). In 1994, 100 community colleges had early access to the internet. By 1999, the first research emerged on the digital divide (van Dijk, 2017).

The digital divide is a complex, multilevel issue with varying definitions that have evolved over time. van Dijk and Hacker (2003) described the digital divide as differences in motivation, skills, and usage. In studying K–12 schools in Florida, Hohlfeld et al. (2008) described the levels of the digital divide as access, usage, and empowerment. These authors also varied in defining access. van Dijk and Hacker (2003) stated how access is defined must first be settled before proposing a definition of the digital divide. Initially, the digital divide was viewed through access to hardware and, later, broadband, which defined the first level of the digital divide (Hohlfeld et al., 2008). However, the issue of the digital divide needed to extend beyond access to include skills, usage, social factors, and personal factors. van Dijk (1999) defined four types of access: (a) mental access, (b) material access, (c) digital skills, and (d) usage opportunities.

Mossberger et al. (2003) conducted phone interviews with over 1,800 low-income individuals in the contiguous United States. The authors found digitally disadvantaged individuals shared similar beliefs as advantaged individuals related to technology, and Black individuals had more positive attitudes about technology use than other racial/ethnic groups. Mossberger et al. (2003) also described the digital divide in four aspects of technological inclusion: "access divide, skills divide, economic opportunity divide, and a democratic divide" (p. 2). The fourth aspect of technological inclusion, democracy, refers to divides concerning online communications that are political in nature. The traditional digital divide most often encompasses three levels: (a) access, (b) usage, and (c) opportunity (Ragnedda, 2021), as depicted in Figure 2.1.

Figure 2.1. Three Levels of the Traditional Digital Divide



Note. Adapted from "*Enhancing Digital Equity: Connecting the Digital Underclass*," by M. Ragnedda, 2021. Copyright 2021 by Palgrave Macmillan.

First-Level Digital Divide

Initially, starting in the early 1990s, the digital divide focused on the lack of physical access to the internet such as broadband access, then progressed to inequities in material access (van Deursen & van Dijk, 2019). Most existing literature has been on the first level of the digital divide. Physical or material access, due to either a lack of infrastructure or economic reasons, is referred to as the first-level digital divide (van Dijk & Hacker, 2003). Material access includes having the means to maintain internet use, devices, software, and peripheral equipment such as printers (van Deursen & van Dijk, 2019). Material access also includes device opportunity, which means having access to diverse types of devices and peripheral equipment, and the ability to replace devices if needed (Gonzales, 2016).

During the COVID-19 global pandemic, access to the internet was essential. According to a Pew Research Center study (Vogels et al., 2020), 87% of adults in 2020 rated access to the internet as essential to have in everyday life. In addition, 52% of low-income adults worried about being able to pay internet or cell phone bills. Conversely, 92% of adults with an annual income greater than $75,000 had reliable internet access. Worldwide, income and higher

education attainment positively impact material access to devices (van Deursen & van Dijk, 2019).

Second-Level Digital Divide

The second level of the digital divide focuses on usage. This second-level divide in education often includes the frequency of use and purpose of technology related to instruction (Hohlfeld et al., 2017). Still, usage also includes lacking the skills necessary to access information technology and the need for digital literacy (Sanders & Scanlon, 2021). Hohlfeld et al. (2017) found differences exist in how technology is used in low socioeconomic schools versus higher socioeconomic schools. Students in K–12 schools from predominantly low socioeconomic backgrounds use technology for drills and practice, and educators provide essential support on technology use (Warschauer et al., 2004). Schools with students from higher socioeconomic backgrounds use technology for higher-level thinking and analysis (Hohlfeld et al., 2017). For community colleges, students arrive with various digital experiences, but the number of students from low socioeconomic backgrounds at community colleges continues to grow (Fry & Cilluffo, 2019). According to the U.S. Census Bureau, the overall U.S. poverty rate was 12.6% in 2022. Although the overall poverty rate has been similar since 1996, the in or near-poverty rate for undergraduate students increased from 29% in 1996 to 39% in 2016 (Fry & Cilluffo, 2019).

Third-Level Digital Divide

In addition to access and usage, the digital divide also has inherent social justice implications. The third level of the digital divide has been the least researched in literature because of the primary dependence on addressing the issues in the first and second levels. In other words, student empowerment is difficult without access to resources and intentional use.

Other researchers have referred to the third level of the digital divide as inequities in outcomes (Ragnedda, 2021) or opportunities (van Deursen & Helsper, 2015). Third-level digital inequities and social inequities must be considered concerning the interconnectedness of cultural, economic, personal, political, and social capital. van Deursen and Helsper (2015) contended different individuals could have different outcomes even with equal access, use, and digital skills.

Hohlfeld et al. (2017) described the three levels of the digital divide as dynamic and fluid rather than hierarchical. Even before the COVID-19 global pandemic, an estimated 12 million students in K–12 education had trouble completing their homework due to the inability to use technology at home (Sanders & Scanlon, 2021). For low-income students, this difficulty was multifactorial due to the lack of at-home internet access, limited cell phone data, lack of reliable technology, and lack of access to eBooks and other learning technologies.

Next Wave of Divides: The Algorithm Divide

In addition to the three levels of the traditional digital divide (i.e., access, usage, and opportunity), new digital divides have developed as technology has advanced. Smart technologies, artificial intelligence (AI), and algorithms can exacerbate existing inequities (Ragnedda, 2021). This algorithm divide has three levels: (a) inequities in knowledge, (b) inequities in the database, and (c) inequities in treatment. This divide in inequalities refers to a lack of understanding of how "big data" (Ragnedda, 2021, p. 62) are collected and used.

Because these algorithms are complex mathematical codes, not all users have the same understanding, and some individuals may be more vulnerable based on social stratification. Eubanks (2018) stated, "Most people are targeted for digital scrutiny as members of social groups, not as individuals" (p. 6). According to Eubanks (2018), oppressed and exploited

populations “bear a much higher burden of monitoring and tracking than advantaged groups” (p. 6). At the higher levels of social stratification, individuals have earlier access to this type of technology and have more digital influence on databases, exacerbating inequities and tilting the balance of power further. Eubanks (2018) stated, “With the notable exception of credit reporting, we have remarkedly limited access to the equations, algorithms, and models that shape and change our lives” (p. 5). These algorithms widen social hierarchies. Ragnedda (2021) shared, “Biased data used by algorithms discriminate citizens, treating them differently based on sociodemographic and socioeconomic features” (p. 73). For example, these algorithms can identify students from poor neighborhoods and target them with predatory ads for loans and for-profit education (O’Neil, 2016).

The use of data to produce algorithms is apt to reinforce marginality (Eubanks, 2018). AI is an essential part of marketing and business. Big data are used to predict a user’s interest using surveillance (Curto et al., 2022). There are numerous examples of algorithm bias against poor individuals, students, and communities (Eubanks, 2018), and some of these algorithms might even be considered predatory (O’Neil, 2016). These algorithms can determine access to health care services, grant home loans, grant parole, sort resumes, and manage welfare systems. Algorithms are now also used to determine salaries. In March 2022, Uber announced an algorithm known as upfront fares to calculate pay for drivers (Schweitzer, 2023). Because the data used to create this algorithm are not public knowledge, drivers have difficulty calculating payment from fares.

Next Wave of Divides: Cybersafety

Technology has become a part of all life aspects, including crime. Cybercrime differs from crime in the physical world because cybercrimes can occur globally and attackers do not

require proximity to the victims; further, criminals can access many victims (Brenner, 2004). Common types of cybercrime include sexual harassment and solicitation, defamation, theft, and fraud (Näsi et al., 2015). Individuals of lower socioeconomic status are at increased digital risk for cyberfraud, cybercrime, and stolen identity (Ragnedda, 2021). Individuals with higher education and income levels are less likely to experience cybercrime (Shan-A-Khuda & Schreuders, 2019). In August 2022, the National Science Foundation granted the University of Florida a $7.5 million grant to study cybersecurity in vulnerable populations, including those of lower socioeconomic status (Logan, 2022). Cybersecurity includes protecting individuals from spam, scams, fraud, identity theft, and other unwanted solicitations. College students may be especially vulnerable due to both socioeconomic factors and the amount of time spent online (Chapman, 2019).

World Economic Forum (2022) reported an increase in cybercrime due to the COVID-19 global pandemic. During this time, many people were suddenly forced to work from home without necessary cybersafety measures in place, and organizations experienced a 31% increase in cyberattacks. These attacks can be costly to institutions, with one cyberattack costing an average of $3.6 million. Three common types of attacks are ransomware, social engineering, and malicious insider activity (Athal, 2022). Ransomware threatens to prevent access or delete information unless the victim pays by a deadline. Ransomware attacks are becoming more common and increased 151% in early 2021 (World Economic Forum, 2022). Social engineering depends on human mistakes and uses psychological manipulation to encourage individuals to disclose secure or sensitive data, making ransomware attacks hard to identify and prevent (Athal, 2022). Malicious insider activity can also occur when a former or current employee uses access to harm an organization.

Community colleges likely experienced an increase in cybersecurity breaches during the COVID-19 global pandemic as well, further exacerbating digital inequity for low socioeconomic students. For example, the California Community College System lost hundreds of thousands of dollars to scammers who applied for financial aid during the pandemic (Burke, 2021). The investigation was ongoing at the time of this writing, and the exact number of fake students and the financial damage is unclear. In 2022, the California Community College System requested additional legislative funding to increase cybersecurity across the 116 college districts (Burke, 2022).

Table 2.1 provides a summary of the types of digital divides. This information includes the divide level, definition, and its use in the literature.

Table 2.1. Types of Digital Divides

Levels of divides	Definition	Literature
First level	Physical or material access, due to either a lack of infrastructure or economic reasons (van Dijk & Hacker, 2003)	87% of adults rated access to the internet as essential to have in everyday life; 52% of low-income adults worry about being able to pay internet or cell phone bills (Vogels et al., 2020)
Second level	In K–12 education, it often includes the frequency of use and purpose of technology related to instruction (Hohlfeld et al., 2017) Also includes lacking the skills necessary to access information technology and the need for digital literacy (Sanders & Scanlon, 2021)	Differences exist in how technology is used in low socioeconomic schools versus higher socioeconomic schools (Hohlfeld et al., 2017; Warschauer et al., 2004)
Third level	Inequities in outcomes (Ragnedda, 2021) or opportunities (van Deursen & Helsper, 2015)	Least researched divide that focuses on the need for student empowerment (Ruecker, 2022) and increasing social and cultural capital (Hohlfeld et al., 2017)
New wave: Algorithm divide	Lack of understanding of how "big data" (Ragnedda, 2021, p. 62) are collected and used	Not all users have same understanding of complex mathematical codes (Eubanks, 2018) Numerous examples of algorithm bias against the poor (Eubanks, 2018), and some of these algorithms might even be considered predatory (O'Neil, 2016)
New wave: Cybersafety	Common types of cybercrime include sexual harassment and solicitation, defamation, theft, and fraud (Näsi et al., 2015)	Occur globally and attackers do not require proximity to the victims, and criminals can access many victims (Brenner, 2004) Individuals of lower socioeconomic status are at increased digital risk for cyberfraud, cybercrime, and stolen identity (Ragnedda, 2021)

The COVID-19 Global Pandemic

The COVID-19 global pandemic created a significant disruption in education, and access to technology became essential. In December 2019, individuals in Wuhan, China, began to experience "an atypical pneumonia-like illness that does not respond well to standard treatments" (David J. Sencer CDC Museum, 2023, para. 1). In January 2020, the Centers for Disease Control

and Prevention began screening individuals flying from Wuhan to major U.S. cities, and the first case was confirmed in Washington state. In February 2020, the conversation about school and business shutdowns began, and the Centers for Disease Control and Prevention created criteria for evaluating and testing patients under investigation. The first known U.S. COVID-related death was on February 29, 2020. By March 2020, there were 118,000 cases and 4,291 deaths worldwide. The World Health Organization officially declared COVID-19 a pandemic on March 11, 2020. On March 13, 2020, the Trump Administration declared COVID-19 a national emergency, and social distancing and mask protocols began. By April 2020, there were over 500,000 documented cases in the United States. By August 2020, there were an estimated 5.4 million cases and 1,000 deaths a day, making COVID-19 the third leading cause of death in the United States at that time.

Considered the largest disruption of education in history, learning for over 1.6 billion students worldwide was disrupted during the COVID-19 global pandemic (VanLeeuwen et al., 2021). Before the pandemic, the United States was experiencing an economic boom, and unemployment was at an all-time low (Floyd, 2021). In Spring 2020, college campuses closed, and educational services and instruction shifted online rapidly (V. S. Katz et al., 2021). This rapid shift to remote learning brought attention to digital inequities for community college students (Floyd, 2021). Shifting to online learning also created a more enormous learning curve for community college students compared to their 4-year counterparts, particularly in the workforce and allied health programs that were primarily face-to-face with large hands-on training components (Bosley & Custer, 2021).

Community college faculty, staff, and students were all impacted by the COVID-19 global pandemic—both at home and at the college—due to increased workloads, family

demands, and health and safety concerns. VanLeeuwen et al. (2021) surveyed college faculty during the pandemic and found faculty experienced increased levels of stress, longer working hours to ensure student needs were met, and significant noninstructional challenges. For example, faculty with school-aged children were trying not only to adjust to the rapid shift in instructional delivery and addressing student needs, but also trying to help their own children at home adjust to remote learning. According to VanLeeuwen et al. (2021), faculty in the first 4 months of the pandemic reported "feelings of never-ending repetitiveness, juggling multiple responsibilities with a limited sense of direction under pressure, and sadness and loss" (p. 1312).

The COVID-19 global pandemic required crisis management on campuses (Hart et al., 2021). During the pandemic, everyday decisions became much more complicated due to ever-changing protocols, including masking, social distancing, disinfecting, and quarantining, resulting in decision fatigue. Decision fatigue occurs when "the store of mental resources for decision-making is depleted, and the quality of decisions made is reduced" (Hirshleifer et al., 2019, p. 84). Self-control becomes impaired, and the potential for emotional responses and bias increases (Pignatiello et al., 2020).

Students experienced increased basic needs and financial insecurities due to stay-at-home orders issued (Center for Community College Student Engagement, 2022) and increased stress and anxiety (Son et al., 2020) during the COVID-19 global pandemic. According to the Center for Community College Student Engagement (2021) survey of students during the pandemic, 34% of students described their financial situation as worse due to the pandemic. Students reported increased stress due to the pandemic; however, only 44% reported access to services to help them cope. During the pandemic, all aspects of education shifted to an online or virtual format, creating further barriers to student success for low socioeconomic students.

Technology as a Basic Need

In the 1990s, the United Nations established the Panel on Technology for Basic Needs, which proposed an assault on poverty by using technology in health, education, and economic development (United Nations Commission on Science and Technology for Development, 1997). This panel defined *basic needs* as "adequate nutrition, healthcare, water, and sanitary facilities — as well as access to education and information that enable individuals and communities to be productive and to make rational use of the available basic goods and services" (United Nations Commission on Science and Technology for Development, 1997, p. 3). Students who experience barriers to meeting basic needs experience more difficulty obtaining a college degree, even without considering a pandemic environment (Floyd, 2021).

In the 2020s, technology has shifted from a tool to address basic needs to be considered one of the basic needs. The Hope Center for College, Community, and Justice (2021) defined *basic student needs* as "access to nutritious and sufficient food; safe, secure, and adequate housing; healthcare for mental and physical well-being; affordable technology and transportation; resources for personal hygiene; and childcare and related needs" (p. 6). Most students with basic needs insecurities are employed while attending school; however, as many as 72% of college students surveyed by the Trellis Foundation reported having worse finances since the COVID-19 global pandemic began (Cornett & Fletcher, 2022).

Historically, community colleges have adapted to meet the needs of students and communities; however, one study before the COVID-19 global pandemic showed a lack of instructor awareness of the digital divide and a perception that the responsibility for addressing the digital divide lies with students (Schone, 2015). The prevailing assumption is that students

are digital natives who arrive in college with the skills necessary to use educational technology successfully, which does not align with the historic mission of community colleges.

The Divide by Demographics

Literature has revealed digital divides across six main demographic characteristics: gender, race, age, socioeconomic status, geographic status, and education level (Bourgeois, 2007). Of these six characteristics, socioeconomic status significantly impacts technology use. Bell et al. (2022) found significantly fewer low-income and first-generation students had access to reliable internet and devices. This study, conducted at a Hispanic-serving institution with a large number of both low-income and first-generation students, explored technology use and internet access before and during the COVID-19 global pandemic. Using a mixed methods approach, this study surveyed 2,188 students and interviewed 26 (Bell et al., 2022). These groups were also more likely to share or borrow devices from others. Differences were also related to demographics. Women in the study were more likely than men to report unstable internet. Full-time students were more likely to have reliable devices but less-reliable internet when compared to part-time students. Students under the age of 25 were more likely to have optimal internet and access to devices, but this group also reported having difficulty maintaining their devices, such as device and software upgrades. All groups in Bell et al.'s study reported challenges accessing live lectures. Pell-eligible students were more likely than non-Pell-eligible students to report issues completing assignments and accessing course materials (e.g., live lectures).

Students From Low Socioeconomic Backgrounds

Community college enrollment was declining even before the COVID-19 global pandemic (AACC, 2019). Birth rates in the United States have been steadily declining since the 1950s (National Center for Health Statistics, 2023). From 2010 to 2017, U.S. community

colleges experienced a 14% decrease in enrollment, equating to roughly 1 million students (AACC, 2019). This decline in community college enrollment impacted all states except for the two states with College Promise programs (i.e., Tennessee and Oregon) during this period. These declines were seen in all age groups except for the under-17 dual enrollment group (AACC, 2019). The pandemic exacerbated the already declining enrollment trend, especially for students from disadvantaged backgrounds.

In 2020, the total poverty rate in the United States was 11.4%, with roughly 37.5 million Americans living in poverty (U.S. Census Bureau, 2022). This number was a 1% increase from 2019. Poverty rates in 2020 were higher for Hispanic individuals (17%) compared to non-Hispanic White individuals (8.2%). African American/Black individuals experienced the highest poverty rate (19.5%). Comparing household data, the poverty rate in 2020 for female single-parent households was 23.4% compared to 4.3% for married couples. In contrast, male single-parent households had an 11.4% poverty rate.

Because students may or may not self-identify as low income, and colleges collect and store income data differently, determining which community colleges have students living in poverty can be challenging. A way to look at socioeconomic data at community colleges is to review data on Pell-eligible students (Delisle, 2017). Awarded by the U.S. Department of Education, the maximum grant allowance for Pell-eligible students was $6,895 for the 2022–2023 school year based on a formula that calculated expected family contribution by factoring in income, household size, and the number of dependents (Hanson, 2023). Roughly 51% of all Pell-grant recipients that year earned an annual income of less than $20,000, with an additional 38% earning less than $50,000 annually. Community college students who live with family and

receive the total Pell grant amount would have roughly 57% of the cost of attendance covered by a Pell grant compared to 31% for community college students who live in campus housing.

Using Pell grant eligibility to evaluate socioeconomic status may not capture all students from low socioeconomic status backgrounds (Delisle, 2017). Not all students who meet income requirements will apply for financial aid. Low-income students may also be ineligible for a Pell grant, such as students with previous student loan defaults, students with drug offenses, or students who failed to make satisfactory academic progress.

U.S. Census data have indicated the poverty rate decreases as education level increases; yet, the number of impoverished students at community colleges continues to increase (Fry & Cilluffo, 2019). The number of students in poverty attending open-admission colleges doubled from 1996 to 2016, but the poverty rate in selective 4-year universities has remained virtually unchanged. As access to higher education has increased for low-income students, fewer low-income students complete college than their higher-income peers (Engle & Tinto, 2008).

Education and Class Mobility

The probability of a child attending a 4-year institution is directly related to their parent's income (Chetty et al., 2017). Lower-income and middle-class individuals are less likely to attend college than their more affluent peers (Reber & Sinclair, 2020). Lower-income students are the least likely to attend highly selective institutions and more likely to attend open-access 2-year colleges that provide affordable education. Since the 1940s, generational inequities have persisted, and the probability that children will be better off economically than their parents continues to decrease. However, research on economic mobility has indicated adult children from low-income families who have either a 2- or a 4-year degree will earn more than their peers with a high school education only (Haskins et al., 2009). Further, students from middle-class

backgrounds who pursue higher education are more likely to remain middle class or higher (Reber & Sinclair, 2020).

Deficit Thinking and the Poverty Ideology

A wealth of research on poverty has adhered to a deficit ideology (Gorski, 2018). In a *deficit ideology*, educators, policymakers, and leaders adhere to the belief that a deficit in specific individuals causes poverty. In deficit thinking, impoverished individuals lack role models, do not value education, lack motivation, or need more grit. Conversely, *structural ideology* recognizes individuals in poverty are impacted by structural inequities.

Poverty is often classified into two main types: situational and generational (Gorski, 2018; Payne, 2018). *Situational poverty* occurs due to a catastrophic life event (e.g., chronic illness, divorce, death) and is usually considered a temporary situation related to monetary resources (Payne, 2018). Generally, individuals experiencing situational poverty have other social and cultural resources. The term *generational poverty* applies to families who have experienced poverty "for at least two generations" (Payne, 2018, p. 61). According to Payne (2018), the main difference between situational and generational poverty is the attitude of the individuals. A third type of poverty, *persistent poverty*, describes people who have lived in poverty for more than 9 years (i.e., half of their childhood; Ratcliffe & McKernan, 2010). Children born into poverty often experience poverty for most of their youth and are more likely to experience poverty into adulthood than children not born into poverty (Ratcliffe & McKernan, 2010). Further, the likelihood of graduating from high school and maintaining consistent employment decreases as the number of years in poverty increases. Additionally, teen births increase as the number of years in poverty increases.

Payne (2018) described generational poverty as a culture or a mindset with hidden rules and values. Gorski (2018) warned this deficit thinking ignores barriers and disparities impoverished individuals face and places blame on individuals. This culture or mindset framing also creates assumptions about impoverished families and ignores intersectionality such as race, ethnicity, gender, sexual orientation, and (dis)ability. Gorski suggested reframing the conversation to generational injustice rather than generational poverty to address inequities systemically.

Eubanks (2018) stated, "Technologies of poverty management are not neutral. They are shaped by our nation's fear of economic insecurity and hatred of the poor; they in turn shape the politics and experience of poverty" (p. 9). Eubanks (2018) argued data and technology often restrict opportunities for poor and working-class individuals by creating a "digital poorhouse" (p. 12) that "polices, profiles, and punishes the poor" (p. 38).

Deficit- and Asset-Based Approaches

The poverty ideology is a deficit-based approach. According to Hayslip (2020), deficit-based approaches in education are wrought with bias, stereotypes, and prejudices that focus on fixing or blaming students. Low-income schools have a higher incidence of teaching to the test (Gorski, 2018) and a greater emphasis on soft skills such as grit and motivation when compared to higher-income schools (Hayslip, 2020).

In contrast, asset-based thinking approaches "place value on students' insights, languages, and cultural practices, as well as seek to critique injustices, oppression, and other social–political issues" (Flint & Jaggers, 2021, p. 254). Asset-based thinking approaches are focused on strengths (Hayslip, 2020). Lindsey et al. (2010) stated, "Asset-based approaches to educational practice and policymaking are not new, just not widely shared" (p. 18). In taking an

asset-based thinking approach, community college leaders are aware of and reflect on their own cultural competency practices, power structures, biases, student needs, and assets (Ahumada-Newhart et al., 2021).

Digital Equity

The terms equity, equality, diversity, and inclusion are often used interchangeably, but these terms have very different meanings. By design, community colleges serve a diverse population. Goals of diversity efforts in education generally focus on increasing representation, which improves tolerance but not equity (Clarke, 2017). Equity focuses on providing resources for student success and reversing or bridging gaps for underrepresented students (Dowd & Bensimon, 2015). Focusing on equity requires empathy (Willems, 2019), fairness, care, and transformation (Dowd & Bensimon, 2015).

As technology advances, needs evolve (Sanders & Scanlon, 2021). As of the 21st century, digital equity is a social justice issue that promotes opportunity for underrepresented groups (Resta et al., 2018). Individuals excluded due to the digital divide experience social exclusion (Sanders & Scanlon, 2021). This access impacts multiple facets of life, from shopping, paying bills, finding employment, accessing health care, and obtaining knowledge through formal and informal education. Although the digital divide concept is deficit focused, digital equity is structurally and asset focused.

Digital Equity Scorecard

The National Digital Inclusion Alliance (NDIA, n.d.) developed the Digital Equity Scorecard. This scorecard explores how states address the digital skills needs of constituents. Data are provided in the following categories:

1. Data on Digital Skills Needs

2. Comprehensive Plan to Address Digital Skills Gaps
3. Online Digital Skills Training
4. Incumbent Worker Training Funds
5. Technology Apprenticeships
6. State Broadband Plans. (Scorse, 2021, p. 1)

Data can be searched either by state or by a specific indicator. Emerging best practices are also listed for each indicator. For example, three states are listed with emerging best practices for the state broadband plan indicator. States are scored on a range from 0 (i.e., none of the six categories are addressed statewide) to 6 (i.e., all six areas are addressed statewide). The state that scored the highest in 2022 was Washington, with a score of 6 out of 6, followed by California, with an overall score of 5.5 out of 6. Over 500,000 of California's 1.5 million unemployed residents lacked foundational digital skills in 2022; yet, 73% of the available jobs required such skills (NDIA, n.d.). Data on digital skills needs indicated California collects and disseminates information on occupations most likely to need digital skills. California also offers state-funded resources for digital skills training, has state-funded incumbent worker training funds, offers technology apprenticeships, and has a state broadband plan (NDIA, n.d.). However, unlike Washington, California does not have a method for collecting and disseminating the state's digital skill needs.

The two states that scored lowest on the scorecard were Mississippi and Georgia, with scores of 1.5 out of 6 (NDIA, n.d.). In 2021, Mississippi had over 32,000 of the 98,000 unemployed residents who lacked digital skills despite 70.2% of open jobs requiring such skills. In Georgia, over 75,000 of the 230,200 unemployed residents lacked digital skills despite 74.8% of job openings requiring such skills. Both states collected data on which occupations required

digital skills, and both provided digital apprenticeships. Neither state adopted a comprehensive plan to address digital skills gaps or a state broadband plan.

Digital Equity Dashboard

In June 2022, Microsoft released the Digital Equity Data Dashboard. This dashboard uses data from multiple sources, including the U.S. Census Bureau, Federal Communication Commission, BroadbandNOW, and Microsoft's own data (Microsoft, 2022). This dashboard breaks down usage by at least 20 factors, including types of broadband access, computer ownership, education, and poverty level to provide a more complete picture of digital equity in the United States.

Although both the Digital Equity Scorecard and the Digital Equity Data Dashboard provide a wealth of information at the state level, community college-specific data are not provided. However, information from these tools provided insight into digital equity in the communities of the colleges chosen for this study.

Theoretical and Conceptual Frameworks

Community colleges are shaped by students' experiences and backgrounds, including students who have experienced oppression or trauma (Shields, 2020). Transformative leaders strive to balance critique with the promise to "seek to critique, deconstruct, and transform structural and societal disparities and inequities" (Shields, 2020, p. 142). Critique requires reflection and evaluation to understand others better. Transformative leaders consider who is marginalized and who is privileged. Multiple critical theories exist that seek to provide emancipation, justice, and equity for marginalized groups.

Freire's Pedagogy of the Oppressed Theory Considered

According to M. Johnson (2020), "Applying critical theory of technology within an educational context requires consultation with Freire's (1970/2000) landmark work, *Pedagogy of the Oppressed*" (p. 1617). The pedagogy of the oppressed theory humanizes the student experience with technology (Farag et al., 2022). Ragnedda (2021) stated, "Technological changes are the result of existing power relationships that lead to consolidation of social hierarchy and structured inequalities" (p. 20). Examples of unequal access to resources are prevalent across multiple cultures throughout history, and technological advances have shaped social structures. Farag et al. (2022) said, "Freire promoted the use of educational technologies if they could aid the project of humanization and liberate students" (p. 4). Freire's model is also meant to evaluate embedded learning structures for possible oppressive dynamics rather than solely looking at the learner or leader (Farag et al., 2022). Freire contended "that education is not the ultimate lever for social transformation, but without it, transformation cannot occur" (Shields, 2011, p. 37).

Paulo Freire was the youngest of four children born into a Brazilian working-class family in the 1920s (Darder, 2018). When Freire was 3 years old, his family's economic and social conditions shifted drastically when his father was forced into early retirement from the military police force due to a heart condition. During this time, the Freire family fell into deeper poverty as Brazil felt the economic impact of the rapid drops in coffee prices caused by the Great Depression. Brazil also experienced a turbulent political period characterized by revolts, a revolution, and a dictatorship, which exacerbated economic instability further. Because of this instability, "Paulo's life was marked by poverty and hunger - conditions he firmly believed

diminished a student's ability to learn [and created a] 'culture of silence'" (Darder, 2018, p. 6) of the oppressed.

Paulo attended an elite private high school on a scholarship (Darder, 2018). His mother insisted he be well-educated and he was "considered fairly intelligent" (Darder, 2018, p. 7) for an impoverished adolescent from outside the city. Darder (2018) shared:

> Freire credited his early experiences of living among the very poor and attending disadvantaged rural schools with instilling in him a profound sense of love, empathy, and compassion, as well as an understanding of how disabling conditions of poverty, reinforced by a colonizing system of education, subject students to debilitating conditions of disempowerment, domestication, and alienation. (p. 7)

Freire developed a commitment to "struggle at the side of the oppressed" (Darder, 2018, p. 7) to redress injustices and construct an educational philosophy that challenges class inequalities and oppression.

Freire stated, "Although one cannot reduce everything to class, class remains an important factor in our understanding of multiple forms of oppression" (Macedo, 2000, p. 14). The oppressors wish to "change the consciousness" (Freire, 1970/2018, p. 74) of the oppressed and not the situation that oppresses them. The oppressed, despite deficit ideology, do not live outside of society. The solution is not to "integrate them into the structure of oppression but to transform the structure so that they can become beings for themselves" (Freire, 1970/2018, p. 74).

Critical Theory of Technology

Technology has become an inherent part of everyday life, where positive and negative aspects coexist simultaneously. In education, technology provides the potential to innovate while

at the same time creating potential power inequalities. Feenberg (2002) noted, “Technology is a two-sided phenomenon: on the one hand the operator, on the other the object. Where both operator and object are human beings, technical action is an exercise of power” (p. 16). In *Transforming Technology: A Critical Theory Revisited*, Feenberg (2002) critiqued the instrumental theory of technology, which viewed technology as neutral, and draws on previous theorists such as Marx (capitalism), Habermas (public sphere) and Foucault (prison) to form the critical theory of technology (Grimes & Feenberg, 2013). The instrumental theory of technology contends that technology is “indifferent to the ends it can be employed to achieve,” “indifferent to politics . . . especially capitalism,” “cannot be readily transferred to new social contexts,” and is socio-politically neutral” (Feenberg, 2002, p. 6). According to the instrumental theory of technology, technology remains neutral in any context and can be “limited by nontechnical values but cannot transform them” (Feenberg, 2002, p. 6).

Feenberg’s (2002) critical theory of technology analyzes new forms of oppression that can result from technological advances and the relationship between people, technologies, society, and the environment. According to Feenberg (2006), “Different worlds, flowing from different technical arrangements and different positions within them, privilege some aspects of the human being and marginalize others.” Feenberg derived the critical theory of technology from Marcuse’s version of the Frankfurt School critical theory. Unlike many early critical theorists, the Frankfurt School explored the technology. Marcuse developed this theory after World War II popularity developed in the 1960s during a time when science and industry were revered in the United States (Feenberg, 2023). Feenberg studied under Marcuse in the late 1960s, earning his PhD in 1972. According to Feenberg (2023), the environmental movement of the late

1970s impacted critical theory and technology in ways that Marcuse did not have a chance to consider before the end of his life.

The critical theory of technology focuses on technical codes built in a capitalistic society and the social influences and implications (Feenberg, 2002). Grimes and Feenberg (2013) said:

> The concepts of formal bias, underdetermination and technical code, enable the critical theory of technology to consider the role of technology as an important – as well as particularly pervasive and powerful – dimension of society, without giving up the constructivist commitment to empirical research. (p. 6)

Five Dimensions of Digital Equity

First introduced in Chapter 1, Resta and Laferrière's (2008) five dimensions of digital equity served as the equity and asset-focused conceptual framework for this study. A conceptual framework "lays out the key factors, constructs, or variables, and presumes relationships among them" (Miles & Huberman, 1994, p. 440). The five dimensions of digital equity framework is informed by research on first-level (i.e., access), second-level (i.e., usage), and third-level (i.e., opportunity) digital divides to identify five dimensions of the digital divide and is built around digital equity for social inclusion and digital equity in education. This chapter also highlighted emerging digital divides, specifically the algorithm divide and the cybersafety divide. These emerging divides could potentially create additional challenges related to the three levels of divides (i.e., access, usage, and opportunity).

There is a strong connection between education and socioeconomic mobility (Cohen & Levinthal, 1989; Haveman & Smeeding, 2006). Digital equity is a social justice goal that also extends beyond access to connectivity and hardware (Resta et al., 2018). van Deursen and Helsper (2015) warned internet usage may even be widening inequities. Ragnedda and Ruiu

(2020) referred to this phenomenon as a "double-loop" (p. 33) because individuals or groups oppressed in society may be oppressed further in the digital realm. The digital divide has expanded the knowledge divide (Resta et al., 2018) because technology is increasingly necessary to access current information. The five dimensions of digital equity identified by Resta and Laferrière (2008) are described further in the following subsections.

Dimension 1: Access to Hardware, Software, and Connectivity to the Internet

According to Resta and Laferrière (2008), "Growing efforts to move toward digital equity is fueled by the prospect that digital exclusion will add to the social and economic exclusion of individual learners" (p. 766). The COVID-19 global pandemic highlighted the digital exclusion of low socioeconomic individuals, and the lack of reliable access became glaringly apparent (Floyd, 2021). Access to hardware, software, and internet connectivity is essential for full participation in society (Resta et al., 2018).

Access to hardware, software, and connectivity remains a challenge for all countries, including the United States (Resta et al., 2018), and has been the most researched dimension (van Dijk & Hacker, 2003). Challenges to access include cost (Resta et al., 2018), scalability (Pittman et al., 2015), and sustainability (Passey et al., 2016). Low socioeconomic individuals may lack at-home internet access and have limited cell phone data, lack of reliable technology, and lack of access to eBooks and other learning technologies (Sanders & Scanlon, 2021). Further, as technologies advance, students and educators may lack the bandwidth to sustain technologies (Resta et al., 2018). One informed strategy includes developing "partnerships between government, education, and the private sectors" (Resta et al., 2018, p. 995).

Dimension 2: Access to Meaningful, High-Quality, and Culturally Relevant Content in Local Languages

Access to meaningful, high-quality, and culturally relevant content in local languages aligns with a third-level divide and has been the least researched dimension due to its complexity (Resta et al., 2018; see Appendix A). This dimension is also hard to address without first addressing the other dimensions. Trust is a primary challenge in addressing this dimension (Resta et al., 2018). Informed strategies for addressing Dimension 2 include a review of policies such as human resources policies, information and communication technologies policy sharing, and building trust (Resta & Laferrière, 2008).

Dimension 3: Access to Creating, Sharing, and Exchanging Digital Content

An ideal information society is one where "everyone can create, access, utilize, and share information and knowledge" (World Summit on the Information Society, 2003, p. 1). This society includes access and usage of digital libraries and repositories, and the development of digital literacy (Resta et al., 2018). Digital literacy is the "ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills" (NDIA, n.d., para. 4) and is one component of digital equity in education. According to Gorski (2018), "Without equity literacy, we lean on stereotypes and deficit thinking regarding individuals in poverty" (p. 16). The World Summit on the Information Society (2003) called for the democratization of content creation, which requires "knowledge creation" (Resta et al., 2018, p. 998) and digital literacy. Informed strategies include allowing teachers and students the "right to produce as well as reproduce knowledge" (Resta et al., 2018, p. 999) and allowing the creation of content that reflects culture.

Dimension 4: Access to Educators Who Know How to Use Digital Resources

Resta et al. (2018) stated, "Achieving digital equity requires high quality and sustained professional development for teachers" (p. 1000). Teacher development remains a challenge

because “rather than innovating, technology is often used to support existing instructional practices, doing the same thing as before but a little more quickly, a little more frequently, or a little better” (Resta et al., 2018, p. 999). Although risk-taking educators transform traditional classrooms, institutions face challenges with scaling innovative teaching strategies (Selwyn, 2013). Partnerships are necessary for scaling and capacity building. Informed strategies for digital content creation include high-quality teacher training, building online and onsite collaborative communities for students, and creating opportunities for educators to network with other educators (Resta et al., 2018).

Dimension 5: Access to High-Quality Research on the Application of Digital Technologies to Enhance Learning

Research on the effective application of digital technologies can inform practice and foster evidence-based decision making (Resta et al., 2018). This research should include using both quantitative and qualitative methods to study emerging digital technologies. Further research on digital equity is still needed that uses “well-established research approaches” and promotes the “development of new research strategies” (Resta et al., 2018, pp. 1000–1001). Resta et al. (2018) stated, “In places where the digital divide is most pronounced, there is also a lack of access to high-quality research” (p. 1001). One informed strategy for fostering research is creating “networked communities” and “multi-institution collaborations” (Resta et al., 2018, p. 1001) plus fostering collaboration with researchers and classroom-based educators.

Challenges for leaders exist in each of the five digital equity domains, and informed decision making is necessary (Resta & Laferrière, 2008). Although a wealth of information on digital equity strategies for kindergarten through 12th grade exists, there have been limited

strategies in the literature for community colleges. Further, these strategies have been implemented in certain areas rather than through large-scale, collegewide efforts.

Conclusion

The continually evolving digital divide is a "social issue rather than a technological problem [that is] embedded in the social structure and hierarchy" (Ragnedda, 2021, p. 51). Ragnedda (2021) stated, "In order to understand, promote, and enact social justice, school leaders must first develop a heightened and critical awareness of oppression, exclusion, marginalization, and justice" (p. 6). Technology is a basic need, and the digital divide has been well-documented in the literature (Ragnedda, 2021). A wealth of research exists on addressing the digital divide in the K–12 setting (Aguilar, 2020; Hohlfeld et al., 2008); however, determining decisions and best practices for addressing digital inequities in community colleges has been a gap in the literature that the current study was designed to address.

Chapter 3 - Methodology

This chapter includes the purpose of this study, research questions (RQs), theoretical and conceptual frameworks, and alignment table first introduced in Chapter 1. Next, the research design, study setting, study participants, and instrumentation are explained. The final section of this chapter explores data collection and sources, data analysis, study quality, ethical considerations, and limitations of the study.

Purpose of the Study

The purpose of this study was to investigate the policies and best practices adopted by community colleges to recognize and address the digital equity gap. This study focused on policies, practices, and leaders' perspectives at one community college with multiple sites that has been acknowledged for digital equity initiatives.

Research Questions

The following two RQs guide this study:

1. What policies and best practices have been adopted by a community college to recognize and address digital equity gaps?
2. What are community college leaders' perspectives of the policies and best practices used to address digital equity gaps?

Theoretical and Conceptual Frameworks

Digital inequities can occur in any community college, from urban to rural to suburban (Shields, 2020). This study focused on opportunity gaps or empowerment gaps rather than achievement gaps. According to the National Center for Education Statistics (n.d.), achievement gaps are gaps in academic outcomes for marginalized groups, such as graduation rates or exam scores. Conversely, opportunity gap "refers to inputs—the unequal or inequitable distribution of

resources and opportunities—while *achievement gap* refers to outputs—the unequal or inequitable distribution of educational results and benefits" (The Glossary of Education Reform, 2013, para. 2). Because digital equity in education is a social justice issue, the researcher of the current study gave careful consideration when choosing the theoretical and conceptual frameworks for this study. Varying definitions of theoretical and conceptual frameworks exist in the literature, and the terms are sometimes used interchangeably despite having different meanings (Lochmiller & Lester, 2016; Roberts & Hyatt, 2018).

According to Grant and Osanloo (2014), "The theoretical framework provides a grounding base, or an anchor, for the literature review, and most importantly, the methods and analysis" (p. 12). Feenberg's (2002) critical theory of technology served as the overarching worldview of this study. When designing this study, the researcher considered multiple theoretical frameworks; however, the critical theory of technology was chosen because the "critical theory of technology argues that technologies are not separate from society but are adapted to their social and political environment" (Grimes & Feenberg, 2013, p. 2). Because society is organized around technology, new power structures emerge with technological changes. In the critical theory of technology, technology is not neutral, but rather, is the relationship between social values, and technical requirements is referred to as "technical codes" (Feenberg, 2002, p. 185). This theory aims to uncover biased technical codes and contribute to the democratization of "the technically mediated institutions in our society" (Feenberg, 2002, p. vi).

A conceptual framework provides structure throughout a study, particularly for the development of instruments, data collection, and data analysis (Ravitch & Riggan, 2016). The researcher used the five dimensions of digital equity (Resta & Laferrière, 2008) as the conceptual

framework during data analysis to gain a better understanding of the decisions and best practices for addressing digital equity gaps. The five dimensions of digital equity were used to develop interview questions and were also used to inform coding during data analysis. The interview questions were structured to align with the conceptual framework (see Appendices A and B).

Alignment Table

The researcher created an alignment table to overview how the conceptual and theoretical frameworks, literature review, and interview questions were aligned (see Appendix A).

Research Design

The researcher chose a qualitative research approach as the most appropriate method for investigating how community colleges addressed digital equity gaps. According to Munhall (2007), "Qualitative research is known for giving voice to people, to hearing people's own personal narrative and using the language of our participants in research" (p. 4). Munhall (2007) also stated qualitative research "emphasizes holism" (p. 5) and explores "situated context" (p. 6). According to Creswell (2016), the definition of qualitative research is evolving continually, and some researchers are reluctant to establish a fixed meaning. For this study, the following definition of qualitative research was used: "Qualitative research is a situated activity that locates the observer in the world. Qualitative research consists of a set of interpretive, material practices that make the world visible. These practices transform the world" (Denzin & Lincoln, 2011, p. 3).

Because this qualitative study aimed to understand policies and best practices implemented by community college leaders to address digital equity gaps, a multisite case study method was implemented. In describing the use of the case method in social inquiry, Stake (1978) asserted, "We expect an inquiry to be carried out so that certain audiences benefit-not just

to swell the archives, but to help persons toward further understandings" (p. 5). Case studies are commonly used in educational research when studying decisions, events, or processes (Yin, 2009). Multisite case studies are appropriate for contemporary topics, and the results are "more convincing, trustworthy, and robust" (Hunziker & Blankenagel, 2021, p. 183) when compared to single-site case studies.

The researcher designed semistructured interviews using the five dimensions of digital equity with community college leaders to identify patterns, concepts, or themes that explored the alignment with Feenberg's (2002) critical theory of technology (see Appendix A). Additionally, the researcher conducted archival document analysis, which is an unobtrusive way to obtain data that provide a "behind-the-scenes look" (Patton, 2002, p. 294) and provide interviewers with leads for asking appropriate questions.

Study Setting

The study setting selection included several criteria. First, the institution had to be a community college with multiple sites. Second, the selected community college system had to have a digital equity statement and a collegewide digital equity initiative. This study was conducted at a community college system with a minimum of five sites. As part of the selection criteria, the community college system selected had an equity statement and an up-to-date technology plan. The National Digital Inclusion Alliance (NDIA, n.d.) Digital Equity Scorecard and the Microsoft Digital Equity Data Dashboard (Microsoft, 2022) were used to inform the selection of the study site. According to the NDIA (n.d.) scorecard, the state-level broadband plans do not pay special attention to marginalized/most disadvantaged populations and do not address the need for and outline goals, objectives, or strategies for addressing market-rate

affordability and low-income affordability. The NDIA scorecard provided insight on digital skills, training, and access available in the state of the study's chosen community college.

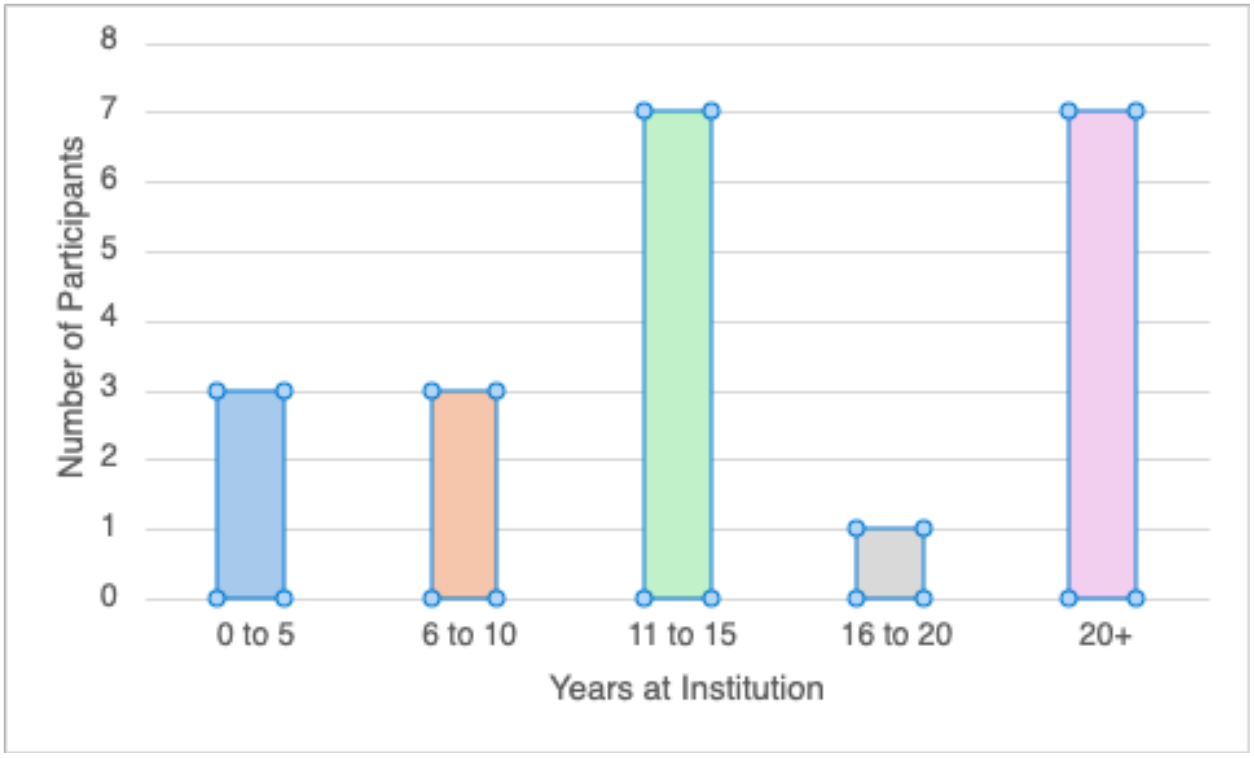
Data from the Digital Equity Scorecard and the Microsoft Digital Equity Data Dashboard were used to inform the researcher on possible digital equity gaps in the community served by the college. Microsoft's (2022) Digital Equity Data Dashboard is unique because researchers can use it to explore digital equity by zip code and counties across the United States by social factors such as education level and socioeconomic status. For this study, the researcher reviewed five social factors for each location in the community college system: (a) below poverty in the last 12 months, (b) households without a desktop or laptop, (c) households without an internet subscription of any type, (d) head of household who is at least 25 years old but without an associate's degree or higher, and (e) percent of schools without a foundational computer science course. The researcher selected these five factors from the dashboard because these factors aligned with the theoretical and conceptual frameworks.

Study Participants

Purposeful sampling was used to collect data. Purposeful sampling is "a technique widely used in qualitative research for the identification and selection of information-rich cases for the most effective use of limited resources" (Palinkas et al., 2015, p. 534). With purposeful sampling, "the researcher selects individuals or sites on the basis of specific criteria" (Lochmiller & Lester, 2016, p. 141) that contain "information-rich cases whose study will illuminate the questions under study" (Patton, 2002, p. 231). Study participants included college leaders in technology, leaders in academic affairs, leaders in technology, and executive leadership. The researcher aimed to collect five interviews with each of the four leader types for a total of at least 20 interviews.

Initial participants were identified through the college's organizational chart and committee membership lists. The researcher also worked with a lead person or gatekeeper at the chosen college system who was recommended by the college president. This gatekeeper assisted the researcher in contacting study participants (Tracy, 2020). At the time of the study, participants were full-time employees at a large urban community college in the United States, which enrolled over 30,000 students annually. A total of 21 volunteers responded via their institutional email addresses and provided consent to participate in the study. Their experience at the college ranged from 2–36 years, as depicted in Figure 3.1.

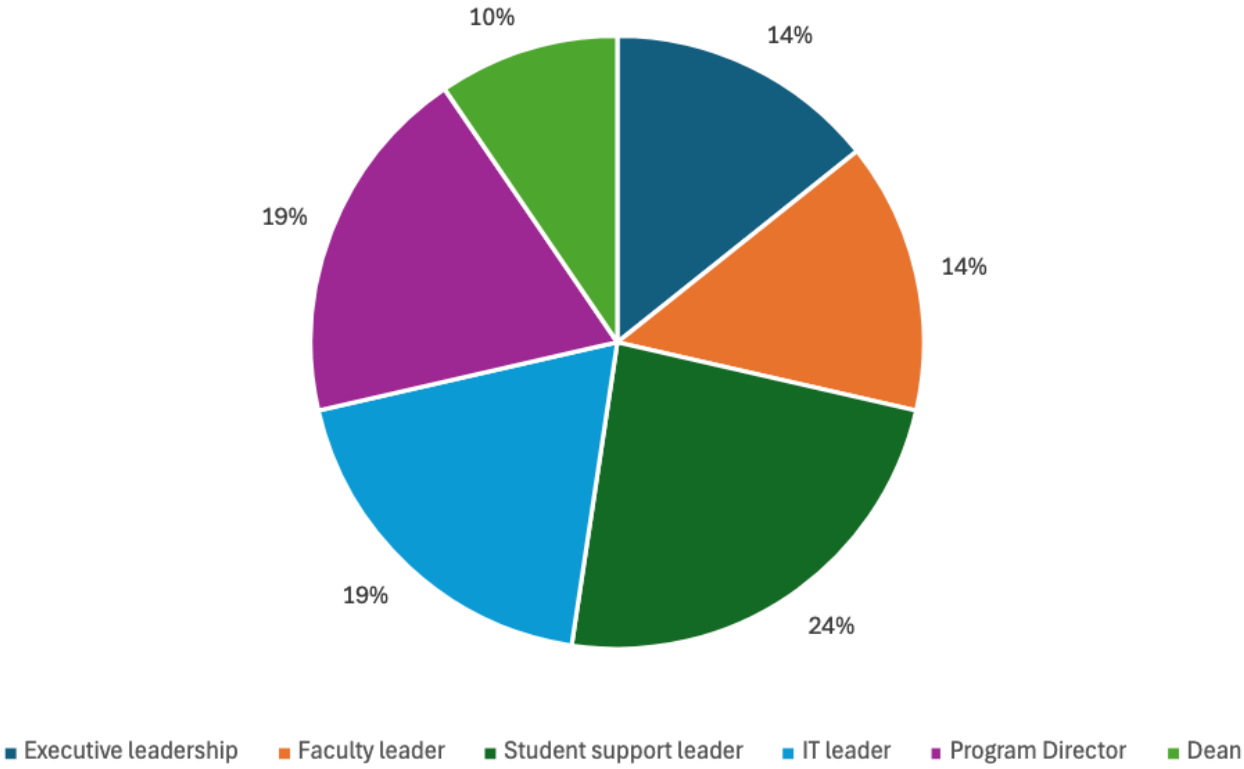
Figure 3.1. Participants' Years of Experience at the Institution



The 21 participants included three executive leaders, three faculty members, five student support specialists, four information technology (IT) professionals, four program directors, and

two deans. Figure 3.2 illustrates the percentage of respondents in each of the identified role categories at the college.

Figure 3.2. Respondents' Roles at the College



The researcher did not collect demographic data such as gender, age, and ethnicity to help maintain participant anonymity. As part of the background information, participants were asked about personal experience with technology and involvement in technology-related decisions at the institution.

Data collection concluded when the study reached saturation, which "is the conceptual yardstick for estimating and assessing qualitative sample sizes" (Guest et al., 2020, p. 1). First introduced by Glaser and Straus in 1967, "Saturation is used in qualitative research as a criterion for discontinuing data collection and/or analysis" (Saunders et al., 2018, p. 1894). It is used to

support the rigor of a qualitative study (Hennink & Kaiser, 2022). Hennink and Kaiser (2022) conducted a systematic review of sample sizes of qualitative studies, and the results showed theoretical saturation could be reached with 9–17 interviews. Other researchers have recommended no more than 20 interviews (Green & Thorogood, 2004) or no more than 50 interviews (Ritchie et al., 2002). Because sample size recommendations can vary greatly (Guest et al., 2020), the researcher's goal was to interview a minimum of 20 participants with a goal of four or five participants at each site.

Instrumentation

In qualitative research, the researcher serves as an instrument (Pezalla et al., 2012; Rubin & Rubin, 2005). For this study, the researcher used semistructured interviews as the primary source of data collection and reviewed college artifacts as a secondary method. Turato (2005) stated, "Researchers use their sensory organs to grasp the study objects, mirroring them in their consciousness, where they then are converted into phenomenological representations to be interpreted" (p. 510). Researchers are responsible for creating an environment that facilitates conversation and can use analytic tools to examine these conversations (Pezalla et al., 2012).

The researcher conducted semistructured interviews using an interview guide that was aligned with the five dimensions of digital equity (see Appendix B). Semistructured interviews are conversational and provide researchers with flexibility and the opportunity to ask additional clarifying questions (Lochmiller & Lester, 2016). According to Owens (2006), qualitative interviews are a social interaction that "make a conversationally safe space for the narration of even the most difficult stories" (p. 1162).

Pilot Study

The researcher conducted a pilot study using the interview guide prior to conducting interviews at the selected community colleges. Participants for the pilot study were chosen through convenience sampling of three to five leaders known by the researcher who were also familiar with qualitative research. As part of the pilot interview, the researcher asked participants the following questions:

- Is the wording for all questions clear? Do any questions need rephrasing?
- Is the interview duration an appropriate length?
- Should any additional questions be included?

The researcher used the results of the pilot study to make adjustments to the interview questions as needed prior to the full study.

Data Collection and Data Sources

The researcher received written permission from the Kansas State University (KSU) Institutional Review Board (IRB) to conduct the study at the community college system and obtained IRB approval from the participating institutions and system as required (see Appendix C). The researcher established initial contact with the office of the community college system president to request permission to conduct research at the selected institution (see Appendix D). After speaking with the college president, a gatekeeper or primary contact was established to help identify study participants.

The researcher collected data during the Summer and Fall 2024 semesters, using purposive sampling to contact identified leaders in the college. Interviews were conducted from July 2024 to December 2024 using Zoom technology and audio recorded during times convenient for participants. The researcher followed an interview protocol that included

identifying participants, obtaining written consent, and a process for scheduling and confirming interviews (see Appendix B). The researcher emailed invitations to participate in the study to designated individuals (see Appendix E).

Interviews were transcribed using the Microsoft Word transcription feature. The researcher wrote memos during interviews and reviewed entries again during the transcription process. Glaser (2004) recommended field notes, or a record of the researcher's observations, over transcription because much of the recovered data in transcriptions go unused. Member checking helps "triangulate the researcher's observations and interpretations" (Stake, 1995, p. 115). To enhance the accuracy of the data, the participants were offered a copy of the transcript to provide opportunity for review and feedback. If participants disclosed information after the recording, the researcher requested permission to use those data and offered a second recorded Zoom session if needed. This type of member-checking process is a positive approach that enhances accuracy (Birt et al., 2016) and increases rigor (Lincoln & Guba, 1985). The college and the participants were deidentified, and names were replaced with codes to ensure anonymity.

The researcher worked with the gatekeeper to identify and review archival documents. Document analysis is often used in case studies to gain a deeper understanding of the identified problem (Stake, 1995). Documents may "reveal goals or decisions that might otherwise be unknown" (Patton, 2002, p. 293). Documents can also reflect organizational beliefs and priorities (Morgan, 2022).

Documents were analyzed before conducting interviews to gain a historical insight of the college (Bowen, 2009). As interviews were conducted, documents were revisited periodically. Additionally, if a participant mentioned a document, the researcher reviewed it shortly after the interview concluded. Documents were revisited and manually coded by the researcher after all

interviews concluded. The researcher also uploaded these historical documents into the MAXQDA data analysis software to search for additional themes.

Data Analysis

Qualitative data analysis is often not a linear research approach. Often, data are collected, analyzed, and coded concurrently (Chun Tie et al., 2019). Data analysis requires researchers to take "our impressions, our observations apart, giving meaning to the parts" (Stake, 1995, p. 71). Data were analyzed through coding and memo writing. The researcher compared and contrasted interview findings and document analysis.

Coding

Coding is "a word or phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data" (Saldaña, 2021, p. 4). Charmaz (2006) shared, "Through coding, you define what is happening in the data and begin to grapple with what it means" (p. 46). Data from interviews and document analysis were aligned to the RQs and the five dimensions of digital equity conceptual framework (Resta & Laferrière, 2008).

The initial coding phase is analysis (Saldaña, 2021). Initial coding looks for similarities and differences in the data while identifying and labeling important words or groups of words. Charmaz (2006) advised "remaining open, working through the data quickly, and sticking closely to the data during initial coding" (pp. 48–49). The researcher was careful to ensure codes fit the data rather than attempting to force the data to fit the codes (Charmaz, 2006). If themes or statements fell outside of the initial coding frameworks, new codes were created. Coding generally uses *gerunds*, which are noun forms of a verb that often end in -ing (Creswell, 2016). Initial coding may be word by word, line by line, or incident by incident (Charmaz, 2006).

Additional information may be needed to supplement developing categories and to highlight what is not yet known (Chun Tie et al., 2019). Coding is a cyclical process that may require recoding or recategorizing as new data are retrieved (Saldaña, 2021). After initial coding comes intermediate coding, where categories are further refined using constant comparative analysis and memo writing (Chun Tie et al., 2019). Synthesis occurs in the next cycle of coding (Saldaña, 2021). During this cycle, the research "reflects through analytic memo writing to reanalyze and synthesize your initial coding" (Saldaña, 2021, p. 146).

The researcher followed the outlined coding process. After listening to the interviews for a second time and reviewing field notes and memos, the transcriptions were read through again and sent to participants for member checking. After all participants had an opportunity to send feedback, interviews and memos were reviewed again, and themes began to emerge.

The researcher used computer-assisted qualitative data analysis systems including NVivo, Dedoose, and MAXQDA software to assist with coding (Silver & Lewins, 2014). Using these types of software allows researchers to create visual representations of emergent themes and to explore different possible themes or codes without losing data (Rademaker et al., 2012). The researcher trialed several different types of coding software to help refine codes and ultimately used MAXQDA. After transcriptions were first uploaded, MAXQDA helped to group content and to search for codes that the researcher manually identified. Table 3.1 depicts the codes used by the researcher in this study. Each code is explored further in Chapter 4.

Table 3.1. Codes

Code	Instance	*n*
Focus on students	308	21
Digital Equity	209	21
Access	129	21
Policy	102	18
Practice	106	21
Asset-based Thinking	71	17
Resources	143	12
COVID-19 Pandemic	84	12
Technology as a Basic Need	122	9
Collaboration	32	7
Innovation	35	5

Note. $N = 21$.

Memo Writing

The researcher also used memo writing to analyze data, refine categories, and define relationships among categories (Charmaz, 2006). Memos worked alongside transcripts and field notes to provide supportive documentation of a study (Birks et al., 2008). Charmaz (2006) stated, "Memo writing constitutes a crucial method . . . because it prompts you to analyze your data and codes early in the research process" (p. 72). Memo writing is an ongoing reflective activity and successive memos are written throughout the data analysis process to capture thoughts, comparisons, and connections (Charmaz, 2006; Chun Tie et al., 2019). Saldaña (2021) stated, "Future directions, unanswered questions, frustrations with the analysis, insightful connections, and anything about the researched and the researcher are acceptable content for memos" (p. 58). Similar to journaling, memo writing also helped the researcher remain organized. Memos serve as a storehouse and audit trail of a researcher's reflections that detail how and why decisions are made related to sampling, coding, and categorizing (Chun Tie et al., 2019).

Study Quality

The researcher used Tracy's (2010) eight big tent criteria for excellence in qualitative research to validate study quality, as depicted in Table 3.2. The criteria include (a) a worthy topic, (b) rich rigor, (c) sincerity, (d) credibility, (e) resonance, (f) significant contribution, (g) ethics, and (h) meaningful coherence. This framework "achieves these qualities by providing a conceptualization that differentiates between end goals of qualitative research (universal hallmarks of quality) and the myriad practices and variant methods, or means, that a researcher can choose from to achieve these goals" (Tracy, 2010, p. 840).

Table 3.2. Validation of Study Quality

Criteria	Definition	Research practices
A worthy topic	Relevant, timely, interesting, significant	The COVID-19 global pandemic highlighted the impact of digital equity gaps between socioeconomic groups (Floyd, 2021).
Rich rigor	The study uses a set of theoretical constructs, data and time in the field, samples, and data collection and analysis processes	This study plans to use Feenberg's critical theory of technology as the theoretical framework and Resta and Laferrière's (2008) five dimensions of digital equity as the conceptual framework to guide data collection and analysis.
Sincerity	Transparency about methods and challenges and self-reflexivity about subjective values, biases, and inclinations of the researcher(s)	The researcher made every effort to be transparent to avoid bias. One test of bias is to be "open to contrary findings" (Yin, 2009, p. 72). The researcher allowed the participants to review transcripts for error.
Credibility	Thick description, concrete detail, explication of tacit (i.e., nontextual) knowledge and showing rather than telling	Choosing a multisite case study approach over a single-site case study approach increases credibility (Stake, 2006; Yin, 2009). The study uses multiple data sources, including document analysis and interviews with member checking.
Resonance	Influences, affects, or moves particular readers; generalizable or transferrable findings	Resonance can be achieved in a case study through transferability (Tracy, 2020). Tracy (2010) stated, "Not every qualitative study must achieve resonance in the same way, but all high-quality qualitative reports must have impact" (p. 844). Data collected from this single case study may resonate with readers by informing practice at other community colleges (Tracy, 2010).
Significant contribution	Conceptually/theoretically	The goal of the study is to extend current knowledge and inform the improvement of decisions and best practices (Tracy, 2010).
Ethics	Ethical practices threaded throughout research process Consideration and protection of human subjects	The researcher followed university procedural ethics as outlined, including obtaining IRB approval, informed consent, and secure data storage and handling. Further, the researcher interacted with participants in an ethical manner by practicing caring and respectful behaviors (Tracy, 2010).
Meaningful coherence	Meaningfully interconnects literature, research questions, and findings	According to Tracy (2010), "meaningfully coherent studies (a) achieve their stated purpose; (b) accomplish what they espouse to be about; (c) use methods and representation practices that partner well with espoused theories and paradigms; and (d) attentively interconnect literature reviewed with research foci, methods, and findings" (p. 848). The researcher ensured meaningful coherence during the cyclical coding process.

Note. IRB = Institutional Review Board. Adapted from "Qualitative Quality: Eight 'Big-Tent' Criteria for Excellent Qualitative Research," by S. J. Tracy, 2010, *Qualitative Inquiry*, *16*(10), 837–851 (https://doi.org/10.1177/1077800410383121).

The researcher considered each of these indicators of study quality as a guideline while conducting the study to maintain study quality.

A Worthy Topic

Examining the decisions and best practices used by community colleges to address digital equity gaps fit the description of a worthy topic. According to Tracy (2020), a *worthy topic* should be "relevant, timely, significant, and interesting" (p. 270). Worthy topics may explore "overlooked, misunderstood, or mistaken" (Tracy, 2020, p. 271) life aspects. The COVID-19 global pandemic highlighted the impact of often-overlooked digital equity gaps between socioeconomic groups (Floyd, 2021).

Rich Rigor

Rigor "refers to the care and effort taken to ensure that the research is carried out in an appropriate manner" (Tracy, 2020, p. 271). Studies with rich rigor use a set of "theoretical constructs, data and time in the field, samples, and data collection and analysis processes" (Tracy, 2020, p. 270). Rigor requires researchers to be motivated and disciplined enough to move beyond what is convenient. For example, interviews should have appropriate sampling to get to the "heart of the matter," and document analysis may require "digging beyond the surface" (Tracy, 2020, p. 271). When gauging study rigor, Tracy (2020) encouraged researchers to reflect on "fidelity (an intimate connection)" (p. 273) and data collection and analysis methods.

Sincerity

Sincerity means "good qualitative research is genuine and vulnerable" (Tracy, 2020, p. 272). Sincere researchers are approachable, friendly, honest, and kind. Sincerity in a research study is "characterized by self-reflexivity about subjective values, biases, and inclinations" and "transparency about methods and challenges" (Tracy, 2020, p. 270). Self-reflexivity requires a

researcher to be authentic and honest about "one's own identity and research approach" (Tracy, 2020, p. 273) and to respect study participants. The researcher made every effort to be transparent to avoid personal bias. One test of bias is for the researcher to be "open to contrary findings" (Yin, 2009, p. 72).

Credibility

According to Tracy (2020), "Qualitative credibility is achieved through thick description, triangulation or crystallization . . . multivocality and partiality, and member reflections with participants" (p. 275). *Thick description* is defined as an "in-depth, contextual, and rich account" that "allows readers to experience the scene . . . with their own senses" (Tracy, 2020, p. 291). Gathering data through multiple avenues increases credibility (Tracy, 2020). In this case, the researcher used both interviews and document analysis to ensure triangulation.

The researcher practiced multivocality and increased credibility by including different types of community college leaders who had different viewpoints (Tracy, 2020). Tracy (2020) distinguished between member reflections and member checks. Although member checking is usually a one-time correspondence—usually via email—to ensure accuracy, member reflections provide "additional insight and credibility" (Tracy, 2020, p. 278). Tracy advised member reflections should be used to guide researchers but researchers should not necessarily change the analysis based on participant disagreement.

Resonance

Resonance "allows the research to be meaningful and influential for audiences and readers across various contexts and situations" (Tracy, 2020, p. 291). Resonance can be achieved through "transferability and naturalistic findings" and "aesthetic representation" (Tracy, 2020, p. 271). Further, "Transferability permits the readers to connect the findings presented in one study

with other situations" (Tracy, 2020, p. 291). Transferability is enhanced when a researcher outlines the "parameters of the research findings" (Tracy, 2020, p. 279). Natural generalization in qualitative research describes the process where readers apply study findings to their own situations. Aesthetic merit involves making the research "striking, evocative, beautiful, and creative" (Tracy, 2020, p. 289). Aesthetic merit adds resonance by encouraging readers to feel and not just think about the topic.

Significant Contribution

A *significant contribution* is "judged by whether the study findings extend, transform, or complicate the body of knowledge . . . in new and important ways" (Tracy, 2020, p. 281). To make a significant contribution, researchers must be willing to dive deep to become familiar with existing literature (see Chapter 2) and "engage in own original research" (Tracy, 2020, p. 281). This case study sought to offer "practically significant research contributions that will be helpful . . . for key stakeholders" (Tracy, 2020, p. 282). To gauge significance, researchers should consider how their research might inform practice or provide tips for the reader. The goal of the current study was to extend current knowledge and inform the improvement of decisions and best practices.

Ethics

Ethical considerations were reviewed at each step of the research process, from initial writing to final defense. These considerations included practicing both procedural and situational ethics (Tracy, 2020). Examples of procedural ethics include following university procedural ethics as outlined, including obtaining IRB approval, informed consent, and secure data storage and handling. Ethical actions for procedural ethics are "do no harm; avoid deception; informed consent; and privacy and confidentiality" (Tracy, 2020, pp. 283–284). Situational ethics are

usually relational in nature and can arise at any point in a study; they include "what is worth reporting and what needs to be protected in a particular context" (Tracy, 2020, p. 291).

Meaningful Coherence

Meaningful coherence means the study should "(a) achieve the stated purpose; (b) accomplish what they espouse to be about; (c) use methods and representation practices that partner well with espoused theories and paradigms; and (d) attentively interconnect literature reviewed with research foci, methods, and findings" (Tracy, 2010, p. 848). The researcher followed the KSU dissertation guidelines provided to ensure alignment of purpose, RQs, frameworks, interview questions, data collection, and data analysis.

Ethical Considerations

To protect human subjects, the researcher collected data following approval by the KSU IRB. The researcher maintained respect for the participants' autonomy (Olson, 2018). According to Olson (2018), autonomy is ensured when a researcher "explicitly asks whether [participants] consent to continue in the study" (p. 8), especially because goals and RQs can evolve over the course of a study. Participants signed an informed consent form that explained participation was voluntary, provided who to contact for questions or problems, and presented all risks and benefits of the study (see Appendix C). The researcher created this form using the KSU IRB informed consent form template and the KSU informed consent checklist.

Participants were protected from harm and privacy was maintained. The researcher instructed interviewees they could leave the interview at any point. Participants were deidentified using pseudonyms. The researcher stored all data on a password-protected external hard drive. All college and participant data were deidentified and will be stored in a safe place for 5 years following the conclusion of the study.

Researchers can ensure justice for participants when researchers use clearly outlined steps to ensure they do not simply obtain expected results (Olson, 2018). A researcher must be a "good listener" (Yin, 2009, p. 70) and clarify personal perspectives and assumptions while maintaining an environment that allows participants' voices to be heard. The researcher of the current study attempted to look at the participants' world through their eyes and made every effort to remain respectful and understanding while interpreting the participants' responses. The researcher is also ethically obligated to keep track of data used in identifying concepts meticulously to ensure the researcher's own perspectives and assumptions do not overshadow the participants' voices. This relationship between the researcher and the data is referred to as an *epistemological consideration* (Olson, 2018). In addition, the researcher practiced member checking to increase trustworthiness. *Member checking* is "an ethical and methodological imperative that alternative interpretations are reported to enable others to make decisions on the transferability of results" (Birt et al., 2016, p. 1806).

Limitations

Although there was a small sample response, the relevance of the findings may be transferable to other settings; however, the results may not be transferrable to every community college. Limitations may have existed due to the experience level of the researcher. As a leader and a community college advocate, the researcher needed to be mindful not to overidentify with study participants. The researcher's presence during data collection may also have impacted the subjects' responses (Anderson, 2010). The researcher made every effort to establish trust and maintain participant anonymity. This study was limited to exploring best practices during one moment in time as technology rapidly evolves.

Summary

Chapter 3 outlined the methodology used for this study. It included an introduction to the chapter and a review of the purpose of the study and RQs. Critical theory of technology served as the theoretical framework by providing an overarching worldview. The conceptual framework, Resta and Laferrière's (2008) five dimensions of digital equity, informed data collection and analysis. The chapter also detailed the research design, study setting, and study participants. The chapter included information on instrumentation, the pilot study, data collection, data analysis, coding, memo writing, and study quality. Finally, this chapter also summarized ethical considerations and study limitations. In Chapter 4, the researcher details the study findings. Chapter 5 provides an overview of the study, implications related to the literature, implications for practice, and recommendations for further research.

Chapter 4 - Research Findings and Analysis

Chapter 4 provides a discussion of the findings. This chapter begins with a review of the research questions (RQs) and a review of the researcher-identified codes. This chapter details the six themes identified (i.e., three per RQ).

Research Questions

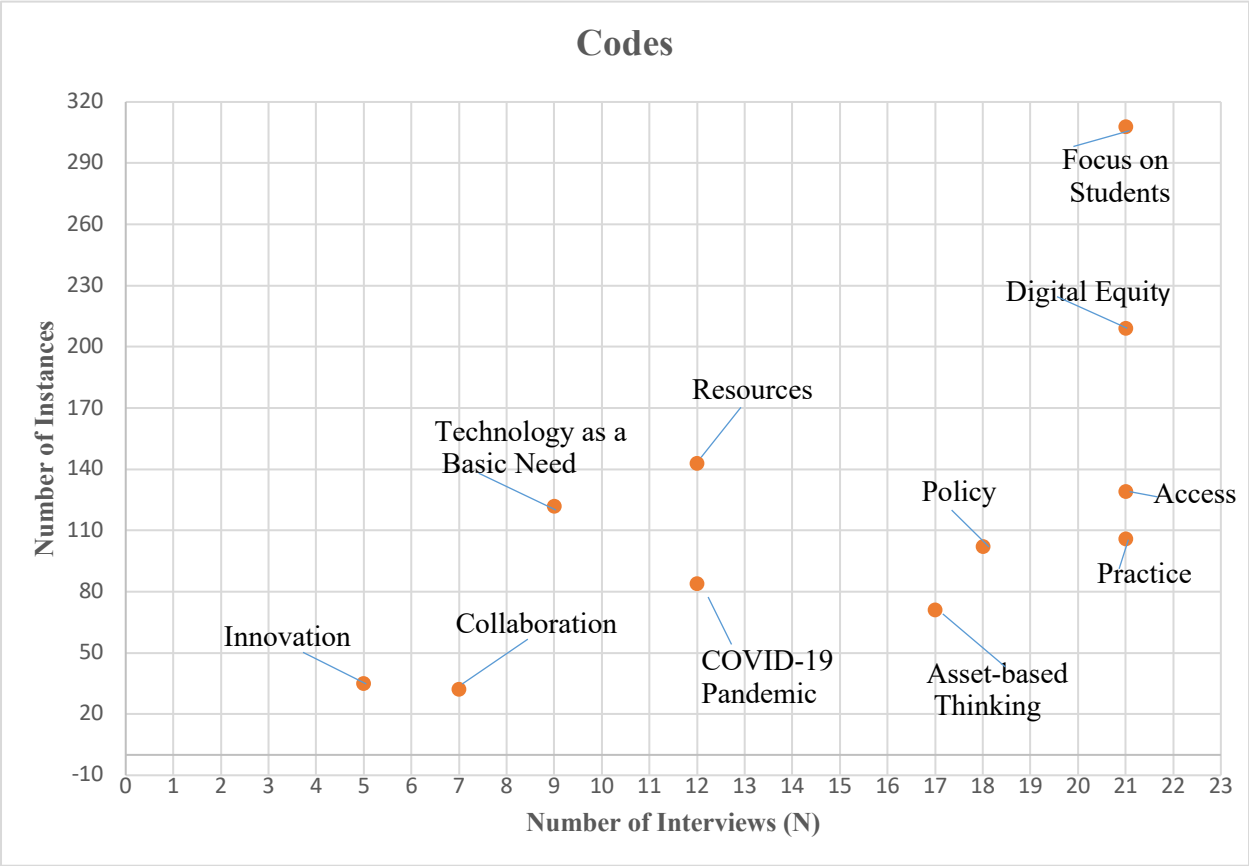
The purpose of this study was to investigate the policies and best practices adopted by community colleges to recognize and address the digital equity gap. The study focused on policies, practices, and leaders' perspectives at one community college with multiple sites that has been acknowledged for digital equity initiatives. The following two RQs guided this study:

1. What policies and best practices have been adopted by a community college to recognize and address digital equity gaps?
2. What are community college leaders' perspectives of the policies and best practices used to address digital equity gaps?

Discussion of Findings

The researcher followed the coding steps outlined in Chapter 3. Linneberg and Korsgaard (2019) describe coding as "an important tool in the process of turning the raw qualitative data into a communicative and trustworthy "story". Participants shared their experiences and perspectives of multiple digital equity initiatives that had been implemented college-wide. Table 3.1 introduced the codes. Figure 4.1 provides a visual representation of the frequency of codes. The vertical axis indicates the number of instances and the horizontal axis indicates the number of interviews.

Figure 4.1. Frequency of Codes



Focus on Students

The researcher sensed a genuine focus on students during both document analysis and throughout the interviews. Document analysis revealed the word "student" 32 times in the acceptable use policy and 31 times in the information technology (IT) master plan. In reviewing the IT master plans and acceptable use policies of five randomly selected community colleges, the term "student" appeared five times or less at each of these institutions.

In coding the focus on students during interviews, the term "student" appeared 308 times throughout all 21 interviews. Participant 19 shared, "As leaders, we want to consider the entire student experience." Participant 12 said:

> As a large urban community college system, we realize the challenges of identifying student needs. Student support services help provide a point of contact that captures student needs. When technology assistance is provided, appointed individuals stay in contact with that student.

Participant 3 noted, "We hired a social worker who focuses on case management. They are working primarily with lower-income students to assist with basic needs, including food, housing, and technology."

Digital Equity

Given digital equity was the topic of this dissertation, this term was found in all 21 interviews. There were 209 instances coded in the 21 interviews with 113 of those instances referring to the digital equity gap. Participant 5 said, "We [the college] always knew that digital equity was important, even though we weren't using that term in 2005." The college has continued to make addressing digital equity a priority. Participant 17 shared about recent institution-wide strategies to address digital equity. They shared:

> Two years ago, the college's theme was addressing equity through technology. And so, it was not only educating people about who our students are in terms of where they come from, what their internet access is like, what their experiences like with technology, but also how as individuals and different offices on campus, we [the college] can actually affect change.

Access

The word "access" related to technological access appeared 129 times across the 21 interviews. Participants were asked interview questions informed by the five dimensions of digital equity outlined in the conceptual framework.

Dimension 1: Access to Hardware, Software, and Connectivity to the Internet

Students had access to computers in multiple spaces on campus. Participant 2 said, "We have open spaces that are open all the hours of the college that are staffed with support people. And we have technologies that make all applications that they need for their classes available on those computers." Participant 13 shared:

> When I first came to this campus, we required students to purchase expensive, high level-computers in order to take courses in our department computer. With grant funding, we purchased a very large virtualization network that we run here on campus that allows students to remote in to do their class and homework. Students can also use higher-level computing machines that are available through the library. So, there's no need now for a student to even really have a computer.

Participant 16 noted they had to ensure "Wi-Fi is available in campus public spaces" and Participant 17 said there was also a "published list of where free Wi-Fi is available in the community for students who do not have access."

Dimension 2: Access to Meaningful, High-Quality, and Culturally Relevant Content in Local Languages

When reviewing interview transcripts and coding for Dimension 2, the researcher noted responses did not describe different languages but discussed the digital equity rubric and accessibility. Participant 4 shared faculty were required to attend accessibility training. Participant 17 clarified the institution purchased software that would automatically provide alternative formats for students and give reports on the accessibility of materials. Participant 18 described how the institution required all digital documents were created using these forms to ensure student accessibility. Participant 15 said, "Faculty have taken a grassroots interest and

want their courses to be as accessible as possible as rated by this tool." Further, they also shared, "There does actually seem to be a lot of interest in faculty and trying to get that above 90% or even like, maybe even be a point of pride in getting the course to 100%."

Dimension 3: Access to Creating, Sharing, and Exchanging Digital Content

Document analysis revealed statements supporting Dimension 3. For example, the acceptable use policy stated, "[The college] encourages the use of the internet to improve communication, share information, and exchange ideas." Depending on the context, individuals associated with the college had access to creating, sharing, and exchanging digital content through various means. For example, Participant 11 described using shared drives, Participant 7 discussed the use of databases, and Participant 1 explained how library sharing was used. Further, Participant 7 also shared students could borrow other forms of technology such as cameras, video equipment, and telescopes.

Dimension 4: Access to Educators Who Know How to Use Digital Resources

The college provided faculty and staff with multiple training options on digital resources. Participant 5 shared, "Faculty have access to a training hub within the [learning management system]. This includes robust training for full-time, adjunct, and new faculty." Participant 9 noted, "All faculty teaching online must complete a required tutorial before they can teach an online course." According to Participant 7, faculty also had "access to instructional designers through the eLearning Division to help guide best practice." The institution also developed a center for teaching and learning. Participant 11 said, "This center offers a wide variety of training, including training on online pedagogy and digital technology." Participant 12 shared, "The institution also helps faculty maintain industry certifications."

Dimension 5: Access to High-Quality Research on the Application of Digital Technologies to Enhance Learning

Access to high-quality research on digital technologies to enhance learning was operationalized in a variety of ways at the college. Participant 1 shared, "We have a support group for employees seeking advanced degrees that meets once a month. This group is open to anybody on campus who is working on an advanced degree to share ideas and research topics." In discussing research, Participant 16 said, "While community colleges might not be considered research institutions, research does take place. [For example,] extensive research went into developing the digital equity rubric." Participant 13 discussed relying on experts and key stakeholders to learn about current technology-related research, sharing, "The institution also relies on both the local business advisory teams and a military base advisory team." Participant 17 discussed frequently "accessing the literature for the most current research and best practice for their discipline." Participants 15 and 17 both discussed having access to peers in their technology-related disciplines with whom to share ideas.

Policy

Policy was identified in102 instances in 18 interviews. The acceptable use policy was mentioned in 27 instances and the IT master plan was mentioned in 18 instances. Seven participants used the specific phrase "technology policy" when discussing either policy. Participant 15 shared, "We do have a system-wide acceptable use policy for information technology that provides guidance for using not only standard technology at our institution, but also AI."

Participants 17, 18, and 21 all noted the IT master plan is updated yearly. Participant 17 described the process for creating this master plan. They shared:

> Several years ago, our information technology department created what they call a liaison. We currently have seven divisions on campus: five are academic, and then there is the division of student affairs and administration. Each division has two IT liaisons whose job is to meet regularly with the departments to identify current and future technology needs, look at future needs, which gets translated into a master plan.

Practice

The code "practice" appeared in 106 instances across all 21 interviews. This code was reserved for responses that discussed ways practices might be operationalized, not for best practices or strategic initiatives. For example, Participant 15 communicated, "For faculty members, there are departmental practices. For an example, in my department, we have a [departmental] practice of providing students in all courses with department-wide expectations for engaging with technology." Participant 9 shared:

> I love to seeing practices that were successful in areas being replicated to other areas. I don't want to be the holder of information. I want to be the sharer of information. I want to be the replicator of good things.

Asset-Based Thinking

When the participants' responses aligned with asset-based thinking as discussed in Chapter 2, the researcher coded using the terms "first-generation," "low-socioeconomic," "poor," and "poverty." The researcher coded 71 total instances of "asset-based thinking" in 17 out of 21 interviews. Participant 4 stated, "Meeting students where they are has been very successful in bridging the digital equity gap."

One way the college was meeting students where they were was by offering technology courses at a local employment opportunity center. When sharing about the institution's

community-based technology courses, Participant 10 shared, “By offering courses in the employment center, we are [physically] where the low-income students actually are.” Participant 5 further added, “The college has a dedicated technology course instructor and the classroom has computer access for each student.”

Six participants shared they had attended a community college at one point, and were first-generation students. Participant 2 noted, “As a first-generation college student myself, I understand how we [the community college] are the entry point for a lot of students.” In commenting on lower socioeconomic students, Participant 11 offered, “Low-socioeconomic students don’t have a ton of money, but they are going to school to make their lives better.”

Resources

There were 143 instances of the term “resources” across 12 out 21 interviews. There were 46 instances of the phrase “IT resources” and 12 instances of the phrase “technology resources.” For example, Participant 5 said, “Part of my work of academic advising was coaching students and connecting students to resources who may need that technology piece.” Participant 16 shared, “Students have access to a lot of digital resources for the program, and need guidance in recognizing how and when to access them.” In discussing work with students in the online environment, Participant 9 offered, “We’re on a constant voyage to try to improve the resources and tools available for our online students so that they can access things as easily and as happily as a student coming to campus would be.” In reviewing memos and field notes, the researcher noted all 21 participants shared at least one example of technology resources at the college, even if the term “resource” was not used.

Specific Strategies

When discussing digital equity-related resources, participants described a range of strategies. Seven strategies in particular were mentioned most frequently. Fifteen out of 21 respondents mentioned the development of a laptop loan program. Seven respondents noted the creation of a PC repair lair. Four respondents discussed using embedded success coaches in online courses. Four respondents addressed using mobile success librarians. Six respondents mentioned offering community-based technology courses. Four respondents addressed fostering community partnerships for student technology needs. Eight respondents discussed development of a digital equity rubric. These specific strategies are discussed further in Chapter 5.

COVID-19 Global Pandemic

There were 53 instances of the term "pandemic" and 32 instances of the term "COVID-19," each term referring to the COVID-19 global pandemic. One or both of these terms were found in 12 out of 21 interviews. Participant 1 said:

> During COVID, there was a big communication push, and we were trying to make sure that anyone who might have any contact with a student knew how to connect students to resources like laptops and that we were giving them out.

Another participant further expressed the desire to continue helping students after the pandemic. Participant 12 stated, "During COVID, we actually purchased a lot of machines that helped students throughout COVID, but after that, COVID dollars ended and we felt like we needed to actually institute a program." Participant 6 offered praise to the eLearning department during this time, stating, "The eLearning department really stepped up during COVID to create collaborative initiatives." In reflecting on the current laptop lending program, Participant 13 offered, "The thing is, I'm not sure if we would ever done this lending program the right way, if we hadn't learned from the COVID laptop program." In looking to the postpandemic future, Participant 19

stated, “One of the things we [the institution] are looking into now is the COVID learning loss and how can we use our digital tools to enhance or to fill the gap created during the pandemic.”

Technology as a Basic Need

There were 122 instances coded for “technology as a basic need” across 14 out of 21 interviews. Although all interviewees discussed technology in some fashion, the researcher used this tag if participants described technology access as essential to student success, completion, or persistence. When discussing technology needs, Participant 12 shared, “Finding an issue is one thing. Fixing that issue is another. We [the college] see the need and are actually making an effort to address it.” In discussing efforts to address needs, Participant 3 provided, “We hired a social worker who focuses on case management. They are working primarily with lower-income students to assist with basic needs including food, housing, and technology.”

Collaboration

There were 32 instances of the code “collaboration” across seven interviews. The researcher also noted participants consistently used “we” when referring to the institution and rarely used “me” or “I.” According to Corbin et al. (2021), “advancing from ‘me’ to ‘we’ fosters greater collaboration across colleges” (p. 71).

As an example of “collaboration,” Participant 15 shared, “The eLearning division and the center for teaching and learning are intentionally co-located. This helps foster continuous collaboration around pedagogy and educational technology.” Participant 21 spoke of community collaboration and shared, “We partner with a community agency [name redacted] to obtain data on learning outcomes at all of the area public schools. This data is used in decision making and to help with collaborative solutions.” Participant 5 elaborated on the collaboration between advisors and other departments, noting, “When faced with a student who has a technology

challenge or has a low information threshold, we collaborate with the ombudsman to find solutions for the student."

Innovation

The term "innovation" appeared 50 times during the document analysis. This term appeared in the mission and vision, the IT master plan, and news releases. Although the specific term "innovation" only appeared in five out 21 interviews, multiple innovations appeared under other codes. In discussing educational technology with Participant 12, they shared, "We actually have an innovation center here that helps foster innovation by providing learning opportunities and guidance on educational technology."

Identified Themes

Reviewing and reflecting on the codes, six total themes emerged (i.e., three for each RQ). Table 4.1 shows themes and associated codes plus the number of interviews associated with each identified theme.

Table 4.1. Identified Themes

Theme	Codes	*n*
Digital Equity Practices Guided by Policies	Digital equity, practices, policies	21
Finding and Meeting Needs	Asset-based thinking, innovation	17
Connecting Students to Resources	Resources	21
Technology as a Tool to Increase Access	Access, technology as a basic need	21
Student-focused Multidisciplinary Approach to Technology-Related Decision Making	Focus on students, collaboration	19
COVID-19 Global Pandemic Lessons Learned	COVID-19 global pandemic	12

Note. $N = 21$.

Findings for RQ1

RQ1 was: What policies and best practices have been adopted by a community college to recognize and address digital equity gaps? Identified themes in support of RQ1 were (a) Digital Equity Practices Guided by Policies, (b) Finding and Meeting Needs, and (c) Connecting Students to Resources.

Digital Equity Practices Guided by Policies

Two key policies were mentioned by multiple participants: (a) the acceptable use for information technology policy and (b) the accessibility policy. According to the participants, the acceptable use for information technology policy governed the use of technology-related tools and artificial intelligence (AI). The IT master plan stated shared governance would guide the acceptable use policies and system-wide technology standards. When asked about policies and practices, Participant 2 shared, "We have the acceptable use policy that is approved each year. This helps guide our technology initiatives and programs we want to pilot." The accessibility policy addressed website and online resource accessibility plus accommodations for students with disabilities. According to Participant 4, "The college has created an accessibility committee that reviews products to ensure accessibility." Further, this participant also shared all content creators for websites and the learning management system (LMS) were required to complete accessibility training. They stated, "We [the college] have created an entire accessibility curriculum." Participant 17, who was a dean, shared, "Approximately one third of their workload centered around accessibility policy review and development."

Participants discussed using faculty and student handbooks to guide technology-related decision making. Participant 18 said, "We just recently added faculty expectations to the faculty handbook that require faculty to have a certain level of digital understanding." Additionally, this

policy required outside vendors to submit documentation to the purchasing department to verify their proposed products met the college's accessibility standards. Participant 4 noted, "We have policies in place that require any type of purchased third-party software to be accessible."

When considering digital equity, 13 participants noted that although a single specific policy did not exist, best practices were in place. According to Participant 17, "I think we [the college] do a pretty good job policy-wise, we're pretty quick to adapt to. Seeing identifying gaps determining potential solutions, which may include policy or practice, and really pursuing both." The college promoted practices that encouraged innovation, were student centered, and fostered communication and collaboration. Participant 15 emphasized the distinction between policies and practices, stating, "We want to be careful between policies and practices. There are various practices at the departmental level that are in place at my institution to identify technology needs of our students." Practices are the actions and processes in place to help the college achieve goals. Participant 18 shared, "Practices, such as digital equity practices, at the departmental level can be altered to meet the identified technology needs for students served in that department." Conversely, policies, as depicted, tended to be more rigid, were harder to change, had to be enforced by leaders, and had consequences for not following. Participants also described the unintended consequences of policies. For example, Participant 12 discussed policies related to permission levels for information technology access. Participant 4 said, "You know, you can block everybody out of their entire computer because the policies for permissions weren't right."

Finding and Meeting Needs

Finding and meeting the needs of students, employees, and the community was an essential part of the college's mission and values, rooted in its founding principles. Participant 21 responded, "I think that this institution really prides itself on understanding what the student

needs are and finding ways to meet them, whether that's technology or food insecurity or other support services, that the students might have." The college designed several initiatives to meet both academic and nonacademic student needs. This commitment was evident in the college's active foundation, extensive student support services, and employment of an ombudsman. Participants 1, 5, 7, and 19 shared the ombudsman provided mediation, support, and advocacy to ensure fairness while overseeing assistance programs such as the laptop loan program. Participant 8 noted the office also created a confidential and private space for students to report their needs.

Finding and meeting needs included connecting innovative practice initiatives with the campus strategic plan. According to Participant 21, "The college strategic plan includes a particular effort to address urban education needs, and that is very strongly driven by understanding digital equity gaps." This statement was supported by document analysis, including the strategic plan. Addressing technology needs and using technology as part of the solution for needs was threaded throughout the strategic plan. During document analysis, the word "innovation" was also found in the mission and values statements, the equity mission, and the IT master plan.

Document analysis also revealed the participating college had been a member of the League for Innovation for over 3 decades. According to The League for Innovation in the Community College (n.d.), "The League for Innovation in the Community College is an international nonprofit organization with a mission to cultivate innovation in the community college environment" (para. 1). The college had received an Innovation of the Year Award annually for at least the prior five years, and all employees were eligible to submit an innovation that aligned with the college's core strategies.

Additionally, the college established a strategy and innovation lab focused on technology and e-learning, serving as a resource hub for educational technology and learning. Multiple respondents reported relying on the innovation lab. Participant 5 described how it involved "dedicated researchers that are analyzing trends and working with community partners." This collaboration included working with community partners to meet student needs. For example, Participant 6 shared, "The innovation lab has worked with partners within the community to host students who need Wi-Fi access." Participants 5, 6, and 19 all described driving around the community measuring signal strength and approaching businesses who agreed to allow students to use the business hot spots. The college system maintained a list of these businesses and the businesses had partnership stickers on the doors that were recognizable by students.

Connecting Students to Resources

Analysis using MAXQDA software identified the word "student" over 300 times across the interviews, with all participants discussing students' needs. Many participants stayed connected to students and the classroom by continuing to teach while serving in senior leadership roles. Participant 13 noted, "I do think that whenever we have to make decisions about technology, there is sort of this mindset that we have to keep in mind that not all of our students have the same access to technology at home."

Participants emphasized the importance of connecting students to resources. When speaking about access to technology in the classroom, Participant 11 stated, "Whenever I have a student who says they have issues accessing technology or accessing the computer to write an assignment, I try to connect them with a resource, and I think that's what faculty are doing." Participant 15 added, "This lack of experience or access should not be a success barrier for students." Participant 17 noted, "Working for the community college, we have an open-door

policy. That means we're going to get students who are at various levels of academic readiness for college courses." This varied academic readiness also included varied levels of technology skills and access. Participant 15 offered, "Simply because I believe that while some people may come with more experience and exposure to technology than others, that doesn't mean that those who have less experience can't learn and be brought up to speed."

Participant 11 emphasized the importance of remembering that "students do not have the same cool toys" as instructors and observed a growing trend of an "increase in students who do not know how to use a PC." When discussing technology trends in education, Participant 11 observed, "Years ago, everybody was good with PCs, and now we are getting students that have never even used one. They do everything on their phone." Participant 6 shared, "Because [a student] knows how to use a smartphone or a computer doesn't necessarily mean that they have all the tools needed to be successful." Emphasizing the importance of access, Participant 11 commented, "We [the college] have to make sure that classrooms are accessible and that students have the technology that mirrors the working environment."

Participants shared introductory computer courses were no longer required for college students at the college and across the college's state, and multiple participants described students as consumers of technology. To increase accessibility, the college implemented cloud-based software in the IT programs, enabling students to complete assignments even with an inexpensive laptop, tablet, or Chromebook. The college also started offering IT fundamentals courses at a community-based employment opportunity center. When discussing this initiative, Participant 4 explained, "Students are taught as if they have no prior knowledge about computers but the goal is to help these students achieve a technician level of computer knowledge."

Although the program required basic reading and math comprehension, students were not expected to have prior technology skills.

Findings for RQ2

RQ2 was: What are community college leaders' perspectives of the policies and best practices used to address digital equity gaps? Identified themes in support of RQ2 were (a) Technology as a Tool to Increase Access, (b) Student-Focused Multidisciplinary Approach to Technology-Related Decision Making, and (c) COVID-19 Global Pandemic Lessons Learned.

Technology as a Tool to Increase Access

The word "access" related to technological access appeared 129 times across the 21 interviews and 66 times across six of the 11 historical documents. When discussing technology access, most participants focused on the student perspective, highlighting a wide range of student technology needs. When discussing technology with participants, the researcher did not ask about specific types of technology, so responses varied. Table 4.2 highlights the most commonly identified types of access. When discussing technology access needs for students, 19 out of 21 participants mentioned computer access a total of 152 times. The LMS and software access were each mentioned by 16 out of 21 participants. The term "broadband" was not used by any of the participants in this study. However, broadband access was identified using the terms "internet," "Wi-Fi," "hotspot," and "web."

Table 4.2. Types of Technology Access Identified by Participants

Type of technology use	Instance	*n*
Computer or PC	152	19
Desktop	18	7
Laptop	96	15
Chromebook	12	6
Phone	34	12
Tablet	7	4
Internet	26	10
Wi-Fi	24	8
Hotspot	5	4
Learning management system	54	16
Software	61	16
Web	22	14
Email	39	6

Note. $N = 21$.

Participants also described the connection between technology and access to educational opportunity. Participant 18 reflected on how their own educational journey shaped their technology-related decision making as a college leader, stating technology allowed them to "maintain a highly active and involved position within the college" and that the opportunity "to complete two degrees would not have been possible without technology." When making technology-related decisions, participants were acutely aware not all students had the same access to technology at home. In reflecting on their experiences working with students, Participant 20 highlighted advocating for dual-enrolled (i.e., high school and community college) students to have access to technology outside of the regular school day. Participant 20 also shared their practice of modifying due dates to support these students better. They shared:

> Because all students didn't have technology or internet access on the weekends, I modified due dates. I know that given a Sunday due date at home, the student might not have internet and so my due dates were Fridays and Mondays.

Additionally, the institution offered courses through five modalities: in person, remote, online, hybrid or blended, and flexible pacing. In person was the traditional face-to-face format. Remote was a synchronous course offered in real time. This option required a camera and a microphone for student participation. Online courses had specific assignment due dates, but no required meeting times. Hybrid or blended combined the in-person, remote, and online modalities. Flexible pacing allowed students to complete the course on their own schedule within course start and end dates. Participant 8 shared faculty were incentivized to teach courses in multiple modalities.

Student-Focused Multidisciplinary Approach to Technology-Related Decision Making

Document analysis and interview coding both showed examples of collaborating across disciplines to identify and meet student needs, including technology-related needs. Further, document analysis revealed committee memberships across various departments and a multidisciplinary approach to policy development, including the IT master plan. Finally, reviewing documents revealed student-centered decision making was evident through student involvement in strategic planning, a robust array of student services addressing both academic and nonacademic needs, and an active student government.

Many participants stayed connected to students and the classroom by continuing to teach while serving in senior leadership roles. Participant 19 shared, "I still teach, so I have used the technology, such as our LMS, and this has been helpful to inform my decision making."

Participant 12 offered, “In addition to working with students to help develop their digital skills, I also teach faculty training courses to help faculty keep up with current digital technology trends.”

As another example of using a student-focused multidisciplinary approach, the college started a program that embedded success coaches and librarians in online courses with higher attrition rates. Participant 7 explained, “These coaches work directly with faculty and students to monitor, revise, and enhance the experience of a course” and the embedded coaches worked to “wrap services around students that will hopefully mitigate some of the digital divides.” These wraparound services included connecting students to basic needs such as technology needs. By leveraging technology, the college was able to bring equitable support services to online students.

COVID-19 Global Pandemic Lessons Learned

Nine of the 21 leaders interviewed directly discussed the impact of the COVID-19 global pandemic on technology-related decision making. Like many institutions, the college received federal funding during the pandemic to help address access issues. This funding supported several initiatives, including starting a technology lending program. However, Participant 5 shared urgency during the pandemic left little time to develop a sustainability plan to maintain student access to technology. They stated, “When the COVID money ran out, many of the programs just went away, and students were negatively impacted.”

Participants acknowledged the unprecedented nature of the COVID-19 global pandemic but emphasized the importance of reflecting on lessons learned. Some participants were reflective and insightful about what worked well during the pandemic and what did not. Participant 6 observed, “The institution does work hard to bring parties from around the campus

to the table when a technology decision is being made." Participant 17 noted the college revitalized technology efforts from the pandemic but was taking time to develop a sustainability plan.

Participants 19 and 21articip focused not on technology needs specifically but on learning loss related to the COVID-19 global pandemic. Participant 19 described how the college was "looking into the COVID learning loss" and exploring ways technology could help meet students' needs. They asked, "As the college continues to evaluate digital equity, how can we use our digital tools to enhance or to fill the gap where COVID learning loss exists?" Participant 21 commented on the need to enhance math education in response to the pandemic learning loss, noting "math is especially needed in technology fields." This concept is explored further in Chapter 5.

Chapter Summary

This chapter provided an overview of the RQs and discussion of the findings. The findings were arranged in themes related to the RQs. Themes for RQ1 were (a) Digital Equity Practices Guided by Policies, (b) Finding and Meeting Needs, and (c) Connecting Students to Resources. Themes for RQ2 were (a) Technology as a Tool to Increase Access, (b) Student-Focused Multidisciplinary Approach to Technology-Related Decision Making, and (c) COVID-19 Global Pandemic Lessons Learned. Participant quotes were identified in support of each theme. Chapter 5 provides a brief summary of the study; reflections on the findings; and implications related to the literature, conceptual framework, and practice. Finally, Chapter 5 offers recommendations for future research.

Chapter 5 - Conclusions and Recommendations

This chapter includes an overview of the study, covering the statement of the problem, purpose of the study, research questions (RQs), and theoretical and conceptual frameworks. The chapter concludes with interpretations of the findings, implications for practice, future research recommendations, and a chapter summary.

Statement of the Problem

The digital divide is a deficit-focused ideology that often focuses on specific marginalized individuals or groups (Schone, 2015). Deficit thinking places blame on students rather than exploring institutional approaches to address inequities (Gorski, 2018). The COVID-19 global pandemic exacerbated the digital divide for low-income students. Alternatively, asset-based thinking focuses on students' strengths (Hayslip, 2020) and well-being (Flint & Jaggers, 2021).

New divides have emerged over time due to technological advancements. Using asset-based thinking, poverty is not used as an excuse, and students and communities are not viewed as needing to be fixed (Lindsey et al., 2010). Asset-based thinking not only focuses on how to improve the lives of students (Valencia, 2010) but also on how students are perceived and valued (Freire, 1970/2018). During the COVID-19 global pandemic, many community college leaders applied asset-based thinking to meet students' technology needs. Federal dollars helped community colleges update technology infrastructures and assist students, but these funds are no longer available (Kisker et al., 2023).

Purpose of the Study

The purpose of this study was to examine the policies and best practices at a community college with multiple sites to recognize and address the digital equity gap. The study focused on

an institution known for its digital equity initiatives, exploring policies, practices, and leaders' perspectives.

Research Questions

The following two RQs guided this study:

1. What policies and best practices have been adopted by a community college to recognize and address digital equity gaps?
2. What are community college leaders' perspectives of the policies and best practices used to address digital equity gaps?

This chapter addresses themes related to each RQ.

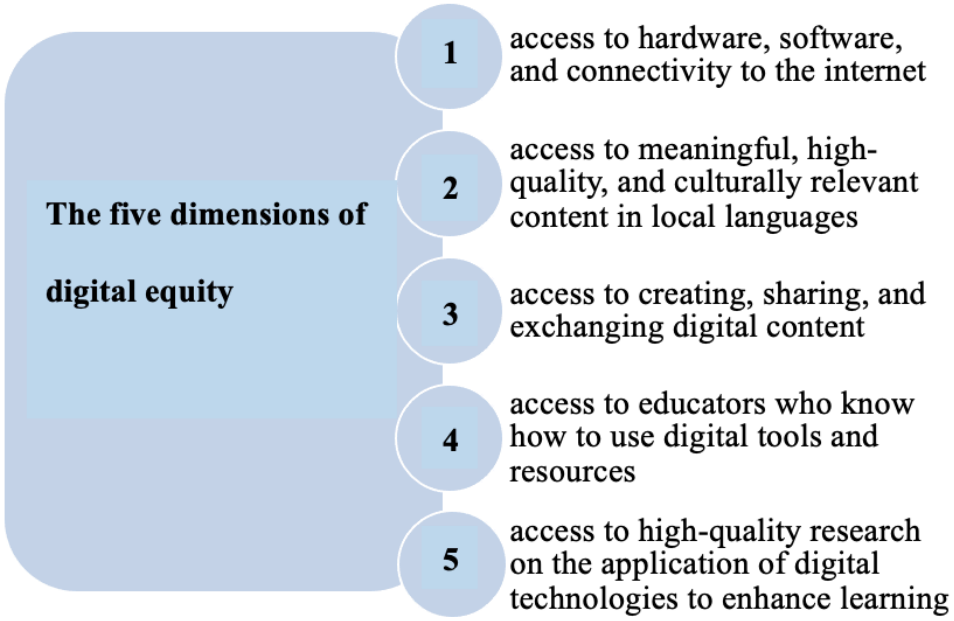
Theoretical and Conceptual Frameworks

The theoretical framework used to guide this study was Feenberg's (2002) critical theory of technology. This theoretical framework served as a "broad lens" and a "rationale for the approach taken" (Lochmiller & Lester, 2016, p. 33) in this study. According to Feenberg's theory: (a) technology is pervasive and powerful; (b) technology is not neutral, and there is a relationship between social values and technology; (c) new power structures emerge with technology changes; and (d) although technology is value laden, technology is indifferent to the ends it can be employed to achieve. Further, the theoretical framework remained consistent throughout the analysis process.

The conceptual framework used to guide this study was the five dimensions of digital equity (Resta & Laferrière, 2008). The conceptual framework allowed the researcher to build on the theoretical framework and served as "both a guide and a product of the analysis" (Lochmiller & Lester, 2016, p. 33). The five dimensions of digital equity served as the conceptual framework for developing this study and guided the study's interview questions. Figure 5.1 illustrates the

levels of access for the five dimensions of digital equity. This conceptual framework was also considered during the coding and analysis processes.

Figure 5.1. Five Dimensions of Digital Equity



Note. Adapted from "Issues and Challenges Related to Digital Equity," by P. Resta and T. Laferrière, in J. Voogt and G. Knezek (Eds.), *International Handbook of Information Technology in Primary and Secondary Education* (p. 768), 2008, Springer. https://doi.org/10.1007/978-0-387-73315-9_44

Interpretations of Findings

This section addresses this study's identified themes as related to the literature. Three themes for RQ1 were (a) Digital Equity Practices Guided by Policies, (b) Finding and Meeting Needs, and (c) Connecting Students to Resources. Three themes for RQ2 were (a) Technology as

a Tool to Increase Access, (b) Student-Focused Multidisciplinary Approach to Technology-Related Decision Making, and (c) COVID-19 Global Pandemic Lessons Learned.

Digital Equity Practices Guided by Policies

Multiple participants iterated a careful distinction between policies and practices that had not been considered prior to the interviews. Policies refer to written rules that guide institutional operations and decision making (Association of Community College Trustees, n.d.). They often reflect a college's mission, vision, and values, and are often written with the intent of complying with local, state, and federal regulations. Practices, on the other hand, represent how policies are actually implemented by community colleges (Association of Community College Trustees, n.d.).

Practices at the college—including those related to digital equity—enabled innovation and adaptation. Roueche et al. (2008) stated, "Creativity encourages innovation outside of traditional boundaries and yet is made possible by relying on unwavering values" (p. 2). Unlike policies, practices foster creativity and can be adjusted more quickly and promote greater efficiency, particularly in response to evolving technology needs. Practices allow colleges to address current realities while simultaneously planning for the future, rather than maintaining the status quo (Roueche et al., 2008). Milliron and de Los Santos (2004) said, "Doing nothing or doing things as they have always been done, even if more quickly, efficiently, or with more technology, will prepare us for a world that no longer exists" (p. 105). Niehaus (2021) noted, "Community colleges are faced with rapidly changing critical issues, requiring an innovative and creative approach to problem solving" (p. 3).

In the current study, participants mentioned digital equity practices guided by policies also helped with the goal of finding and meeting student needs, highlighting multiple innovative

digital equity and technology-related practices. An innovation mindset fostered a culture that recognized failure as part of the quality improvement process. Participant 8 shared, “You do get the opportunity to fail. When things are not successful, you get to table it for a little while and try it again.” According to Corbin et al. (2021), “An organization that celebrates failure experiences the fastest rate of innovation and project scalability” (p. 73). When asked about an unsuccessful initiative at the college, study participants were insightful regarding lessons learned.

Finding and Meeting Needs

The goal of finding and meeting student needs dates back to the founding of the first U.S. community colleges. Although early community colleges primarily offered a general liberal arts education intended to prepare elite students for transfer to bachelor’s degree programs, widespread unemployment during the Great Depression in the 1920s and 1930s prompted a shift to workforce education, and the number of community colleges began to grow (Jurgens, 2010). After World War II, community colleges also began to house continuing education programs, creating further growth (Jurgens, 2010). In the 1950s, the community college landscape had broadened to include students of diverse racial and religious backgrounds (Greenberg, 2004), and almost half of the approximately 16 million service veterans had used the G.I. Bill to pursue higher education (Mettler, 2005).

Modern community colleges, often described as open-door institutions, are considered the “foundation for economic growth and mobility” (Bailey et al., 2015, p. 1), particularly for underrepresented groups, including students from lower socioeconomic backgrounds, first-generation college students, and ethnic minority students. When working with students from low socioeconomic backgrounds, discussions often center around deficit thinking, which places

blame on students (Gorski, 2018). This type of bias promotes teaching practices focused on rote memorization and test preparation.

Participants in this study consistently provided responses through an asset-based lens. The phrases “finding needs,” “meeting needs,” “find a way,” and “make a way” appeared in numerous college press releases from leaders, some dating back to the early 2000s. Participants in this study conveyed a strong institutional culture focused on finding and meeting needs.

Connecting Students to Resources

While discussing participants’ experiences with educational technology, many participants shared not only their personal experiences as students but also insights from a faculty perspective. Additionally, key policies, including IT policies, addressed both students as technology users and the ways faculty and staff used technology to communicate with students and protect student records. Although the digital divide remains complex, with new divides emerging, students continue to be impacted by first-level divide issues (Kronenfeld & Kronenfeld, 2020; van Dijk & Hacker, 2003). Physical access to technology remains a challenge for students due to both high costs and rapidly advancing technological changes. Participants shared an awareness that although physical access to technology is necessary for student success, students may have varying levels of access at home.

Technology as a Tool to Increase Access

Ragnedda (2021) described the digital divide as having three levels: access, usage, and outcomes. Access, particularly physical access to technology, is often referred to as a first-level divide. Usage, or a second-level divide, refers to both frequency and purpose of educational technology use (Hohlfeld et al., 2017) plus digital literacy and necessary competencies to access technology effectively (Sanders & Scanlon, 2021). Outcomes, which Ragnedda (2021) framed as

a social justice issue, are a third-level divide. Other scholars have replaced outcomes with lack of opportunity (Mossberger et al., 2003; van Deursen & Helsper, 2015) or lack of empowerment (Hohlfeld et al., 2017) to describe the third-level divide. These three interconnected divides are not hierarchical (Hohlfeld et al., 2017).

Literature has supported the relationship between education and economic mobility (Haskins et al., 2009; Reber & Sinclair, 2020), and technology is a key component of educational attainment. Roueche et al. (2008) described technology as "the mobility tool by which students will create and maintain" (p. 13). The college system in the current study used technology to increase educational access by providing most courses through a variety of modalities. Students had the option to take courses in online, remote, flexible, in-person, or blended formats. Faculty were not required to teach in multiple modalities, but those who chose to received additional compensation.

Recognizing technology had become a basic need, participants explored and implemented innovative practices to address this need. Access to the internet and computer ownership are linked to income (Sanders & Scanlon, 2021), and many community college students may not have the necessary technological tools at home to support their studies. Table 4.2 highlights the different types of technology access identified by participants. The most frequent responses among the 21 respondents were "computer or PC" (n = 19), "internet" or "Wi-Fi" (n = 18), "software" (n = 16), and "LMS" (n = 16).

Findings from interviews supported the notion that "demographic, technological, and economic circumstances leave a large segment of society without home computers" (Roueche et al., 2008, p. 14). Roueche et al. (2008) argued meeting the challenge of lack of access to technology requires not only offering computers or internet access but also addressing

psychological and economic challenges. Technology is not just a tool to address basic needs; access to technology itself must be considered a basic need. As technology rapidly advances, the ability to reach people without access to it decreases. Engle and Tinto (2008) stated:

> The question for institutions is not merely whether they should promote high expectations. They should. The question is not whether they should provide academic and social support. They must. Rather, the question is how they can make sure high expectations and support services are present—visible, accessible, unavoidable—where students are. After all, these efforts will only promote student success if students engage in them. (p. 2)

As discussed in Chapter 4, the institution hired a social worker to provide case management for low socioeconomic students. Adams et al. (2014) described case management as "a human link between the client and the community system" (p. 448). The social worker worked to meet individual needs, including access to technology.

Participants discussed several practices and initiatives to help address basic technology needs for students. As discussed in Chapter 4, one strategy included offering courses through different modalities: in-person, remote, online, hybrid or blended, and flexible pacing. Faculty were incentivized to teach the same course through modalities, and were provided with training and instructional support.

Student-Focused Multidisciplinary Approach to Technology-Related Decision Making

Participants shared multiple instances of using a student-focused multidisciplinary approach to technology-related decision making at the institution. As noted in Chapter 4, many of the participants used "we" statements instead of "me" or "I" statements. Klein (2021)

described this shift as foundational to establishing a culture of engagement that "not only encourages everyone's recognition of shared values and areas of concern, but also develops a willingness to address those concerns" (p. 101). Participant 6 iterated those concerns by sharing, "Our current laptop loan program was partially funded through staff donations to the college's emergency fund . . . this emergency grant fund is the most frequently funded by employees of all the options they have to choose from."

Many of the leaders, including executive leaders, at the institution taught one or more classes to stay connected to the student experience. By continuing to teach either online or face-to-face, leaders were acutely aware of technology needed by both faculty and students. Participants also described a multidisciplinary approach to policy revisions and best practice development. Chapter 4 discussed the utilization of IT liaisons. Each department was assigned an IT liaison to assist faculty and staff with the implementation and use of technology. These liaisons collaborated with both IT and instruction to help meet student, faculty, and staff needs.

The college also embedded success coaches into courses, including online courses. These coaches worked closely with faculty and were available to help students navigate academic and nonacademic challenges. This navigation included connecting students to training to improve technology-related skills. Coaches also helped connect students to resources to address technology needs. These success coaches monitored course engagement and helped connect students to college resources. This practice included identifying students' technology needs and mitigating digital divides. Using embedded success coaches in online courses was also an example of a multidisciplinary collaboration. Using this model, faculty and student services staff worked closely together to serve students better, which informed technology-related decision making.

COVID-19 Global Pandemic Lessons Learned

The basic and financial needs insecurities experienced during the COVID-19 global pandemic required crisis management (Hart et al., 2021), prompting quick and difficult decisions. Technology-related initiatives implemented during this time were designed to meet the immediate needs of students, faculty, and staff without consideration of the long-term sustainability of these initiatives. As participants reflected on lessons learned, they acknowledged the temporary influx of technology had greatly benefitted students, faculty, and staff. However, the technology purchased was several years old. Given the unprecedented nature of the pandemic, participants were not initially concerned with developing a plan for maintaining, updating, and collecting the loaned equipment. A checkout process was developed quickly without consideration of a systematic return process. Floyd (2021) noted, "Now is the time to pause, to reflect, to think deeply about our mission, vision, and values. By embracing the pause, we can use this opportunity to better align our programs and services with our core purpose" (p. 3). After the pandemic, college leaders began to reflect on lessons learned. Recognizing that technology is a basic need, The Hope Center for College, Community, and Justice (2021) decided to reinstitute the technology loan program, and they took the time to develop a more sustainable and well-thought-out approach.

Since the COVID-19 global pandemic, U.S. attitudes toward education have shifted, and community colleges are uniquely poised to serve both students and communities. A bachelor's degree is no longer considered the "best pathway to economic mobility [because] community colleges do not face the same elitist stigma or out-of-touch stereotypes attached to prestigious four-year universities" (Schwartz & Lipson, 2023, p. 151). As leaders navigate the postpandemic political landscape, technology-related decisions must remain focused on the needs of students.

In taking a multidisciplinary approach to addressing digital equity gaps, leaders should also recognize staff and faculty may have varying skill levels.

Emerging Promising Practices

Participants in this case study identified seven specific strategies used to promote digital equity: (a) development of a laptop loan program, (b) creation of the PC repair lair, (c) using embedded success coaches in online courses, (d) using mobile success librarians, (e) offering community-based technology courses, (f) fostering community partnerships for student technology needs, and (g) development of a digital equity rubric. These seven specific strategies could be promising practices for other institutions.

Participants in the current study identified an increasing number of students who had never used a computer. Participant 7 noted, “It’s amazing how many students start college thinking that they can just do everything on their phone, and they don’t have computers.” The laptop loan program was the most frequently discussed initiative. Through this program, students could confidentially self-identify their need for a computer by contacting the ombuds office. A committee, composed of members from across the college system, developed this program using a multidisciplinary approach. To control costs and increase purchasing power, the college’s foundation purchased the laptops. Additionally, staff and faculty could refer students to the ombuds office for assistance if they identified the student needed a computer.

The institution also created a computer repair program referred to as the PC lair program. This program employed students and offered free computer repair services for students, faculty, and staff. Services included virus/malware removal, diagnostics, and tune-ups, and the program staff could sometimes replace parts. Student employees assisted with downloading software needed for coursework and helped maintain the loaned laptops.

Embedded success coaches in high attrition courses worked to connect students to technology resources and helped provide online students with an equitable experience compared to students in face-to-face courses. At the same time, mobile success librarians met students where they were. This process included creating pop-up help desks at events or outside of classrooms. These librarians worked to address third-level divide issues related to opportunity and outcomes.

The institution also offered introductory IT courses in the community employment opportunity center. Here, students had access to any equipment or software needed to complete a course successfully. These courses were also offered by an instructor familiar with this community.

Participants shared several examples of community partnerships for student technology needs. Examples included creating a list of businesses that had free internet available to students and exploring ways to collaborate with other institutions to improve technology purchasing.

Finally, the institution created a digital equity rubric. Participant 18 noted this rubric was designed by the institution using faculty, staff, and student input. The digital equity rubric served as an evaluation tool for course design and content. According to Participants 8 and 9, the equity rubric was developed by a multidisciplinary committee through a grant-funded initiative. Participant 5 noted the committee also requested student feedback through surveys and focus groups. Participant 15 described the digital equity rubric as “concise and easy to use.” Although it was initially used in a single division, the equity rubric moved to be a required component of instructional design throughout the institution.

Implications for Practice

For most modern-day college students, technology such as computers and the internet have always been a part of their lives, leading to the assumption that all students are digital natives (Kirschner & De Bruyckere, 2017). However, participants in the current study observed an increase in students who had never used a computer, either at home or at school. Although phone technology has advanced significantly, it has not yet reached a point where it can fully replace computers in an educational setting. As such, students may need additional orientation on how to use hardware and software as part of their coursework. Additionally, as technology continues to evolve, leaders need to review policies and practices regularly for evaluating and retraining faculty and staff on technology. Given the numerous options available, technology-related decisions (e.g., whether to build or buy software) would be well-served to prioritize the best interests of students.

The digital divide is neither linear nor hierarchical; further, it contributes to social and economic exclusion (Resta & Laferrière, 2008). Digital equity is a complex and multifaceted issue that requires an asset-based, multidisciplinary approach. Participants in this study were aware of digital divides present in the college and shared a system-wide commitment to improving digital equity. In meeting study participants, the researcher was impressed by the college system's ability to recruit, retain, and train talent. Although the researcher was assigned a gatekeeper, this gatekeeper facilitated connections but did not choose participants for the study. Several participants shared they had graduated from the college or another community college and later obtained advanced degrees. Employment at the college system ranged 2–36 years, with an average tenure of 15.5 years. Participants were passionate about the research topic, dedicated to working with students, and expressed pride in the college.

Each participant provided a unique contribution to addressing digital equity. IT participants worked collaboratively across departments and provided liaisons who understood the unique needs of the assigned department. Many of the college leaders in this study still taught at least one class and remained acutely aware of student and faculty technology needs. Two roles that participants identified as invaluable for addressing digital equity gaps were student services staff and librarians. Student services staff played an invaluable role in both identifying needs and connecting students to technology. This college system had success librarians who not only helped students develop digital literacy but also helped ensure the accuracy of college information and connected students to services. These librarians also offered on-location programs where the librarians met students at various programs or events. Implications for practice are explored further in this section related to the conceptual framework, for smaller and rural colleges, and for professional organizations.

Implications Related to the Conceptual Framework

Achieving digital equity education requires more than just physical access to computers and connectivity. To reach this goal, equitable access to learning resources and opportunities are necessary (Pittman et al., 2015). Resta and Laferrière (2008) developed the five dimensions of digital equity framework that guided this study:

1. access to hardware, software, and connectivity to the internet
2. access to meaningful, high-quality, and culturally relevant content in local languages
3. access to creating, sharing, and exchanging digital content
4. access to educators who know how to use digital tools and resources
5. access to high-quality research on the application of digital technologies to enhance learning. (p. 768)

Resta and Laferrière first developed this conceptual framework in 2008 when discussing the issues and challenges related to digital equity. Resta and Laferrière, along with authors McLaughlin and Kouraogo, reexamined this framework in 2018. Although this framework was developed to address digital equity issues and challenges on a global scale, this study used this framework to explore digital equity in the community college context.

The study findings aligned with the conceptual framework, especially in Dimensions 1, 3, 4, and 5. For Dimension 2, participants framed responses not around culture and language as described by Resta and Laferrière (2008), but rather around access to meaningful, high-quality, culturally relevant content aligned with the college's digital equity rubric. This digital equity rubric served as a tool to evaluate three key areas: the presence of human bias, content meaning, and connection and belonging. Implications for each dimension are explored in further detail in the following subsections.

Dimension 1: Access to Hardware, Software, and Connectivity to the Internet

The review of the literature identified cost (Resta et al., 2018), scalability (Pittman et al., 2015), and sustainability (Passey et al., 2016) as challenges to access to hardware, software, and connectivity to the internet. The COVID-19 global pandemic further highlighted and exacerbated these challenges.

Resta et al. (2018) identified partnership development as an informed strategy. As discussed in Chapter 4, participants in this study were acutely aware of access issues and identified several informed strategies implemented in their institution.

For access to hardware issues, the institution revitalized a laptop loan program initially implemented during the COVID-19 global pandemic. Further, the faculty and staff at the institution developed a repair lab that employed students to repair computers. This repair lab also

helped with software installation. The institution also partnered with local businesses to create a network of safe spaces for students to use hotspots.

Dimension 2: Access to Meaningful, High-Quality, and Culturally Relevant Content in Local Languages

Trust was the primary challenge in addressing this dimension. Although there is a great deal of information available on the web, the majority is stored in databases and not easily accessible for all people (Resta et al., 2018). When reviewing the literature, informed strategies included reviewing of policies such as human resources policies, information and communication technologies policy sharing, and building trust (Resta & Laferrière, 2008). Using quality assurance guidelines and collaborative open educational resources were also informed strategies identified in the literature (Resta et al., 2018).

Because participants in this study were all leaders from one institution in the United States, there was less emphasis on specific cultures and different languages. Instead, participants gave responses that aligned with ensuring access to meaningful, high-quality, culturally relevant content aligned with the college's digital equity rubric. This access included assessing course design and content for human bias, content meaning, and connection and belonging. This rubric was created by faculty and staff at the college and was also used in the college's course review checklist.

Dimensions 3: Access to Creating, Sharing, and Exchanging Digital Content

The review of the literature highlighted both the issue of access to library content and access to opportunities to increase knowledge through content creation (Resta et al., 2018). To address this challenge, Resta et al. (2018) argued the need to take "advantage of local circumstances and expertise to make contributions to one's community" (p. 998). Informed

strategies in the literature called for "both access to knowledge and to opportunities to create knowledge" (Resta et al., 2018, p. 998) where both teachers and students have the right to produce knowledge and create content.

Participants in this study provided examples of both access to library content and to content creation opportunities. Participants in this study acknowledged librarians had a unique skillset that was immensely valuable to both faculty and students. Librarians at this institution were not only in a traditional brick-and-mortar building, but also provided mobile pop-up programming and services that met students where they were. Participants were also able to provide multiple examples of opportunities to create, share, and exchange digital content. One example was the establishment of community-based technology courses located in community and employment centers.

Dimension 4: Access to Educators Who Know How to Use Digital Tools and Resources

Educational innovation requires an institutional commitment to teacher development. Teachers must be willing to innovate and take risks. The review of the literature emphasized the importance of support from leadership (Selwyn, 2013). Further, institutions often rely on a few risk-taking educators, and face challenges with scaling innovative teaching strategies (Selwyn, 2013). Informed strategies from the literature included exploring partnerships such as third-party providers and the provision of "high quality and sustained professional development for teachers" (Resta et al., 2018, p. 1000).

Participants in this study and a review of historical documents painted a picture of a strong culture of innovation. In addition to faculty leaders, many participants in this study still taught at least one course. Participants discussed the importance of staying current with both

technology and with educational best practices. The institution had processes in place for faculty to self-identify learning needs and multiple faculty development opportunities were provided through a center for teaching and learning. This center not only provided development opportunities but also had processes in place to help identify faculty learning needs.

Dimension 5: Access to High-Quality Research on the Application of Digital Technologies to Enhance Learning

Innovation requires both access to well-established evidence-based approaches and to opportunity to generate new research. Resta et al. (2018) argued that "in places where the digital divide is most pronounced, there is typically also a lack of access to high-quality research" (p. 1001). One informed strategy for fostering research is creating "networked communities" and "multi-institution collaborations" (Resta et al., 2018, p. 1001) and fostering collaboration with researchers and classroom-based educators.

Participants in this study shared a perception that community colleges are sometimes considered consumers of established research rather than generators of new research. However, this institution regularly conducted and participated in educational research and multiple interview participants shared current research findings. Further, the institution encouraged innovation and pilot projects.

Implications for Smaller and Rural Colleges

Addressing digital equity at the urban community college in this study was a grassroots effort spurred by the college's innovative culture of finding and meeting needs. Community colleges, including smaller or rural colleges, could address digital equity gaps by developing a comprehensive approach to continuous improvement. According to A. Johnson (2021), by using this process, "transformation is gradual and focuses on improving existing strategy, practices,

and products" (p. 14). This process could begin with less expensive strategies such as adopting a system-wide digital equity rubric and reviewing current policies and practices including the IT master plan. When reviewing technology policies and practices, colleges should consider how technology is supporting student success or creating potential barriers. Colleges could also consider forming partnerships to meet technology needs such as access to hardware or Wi-Fi. Community colleges could partner with other institutions to reduce cost barriers and improve purchasing power of hardware, software, or other educational technologies.

Creating a culture of digital equity "takes committed leaders who believe that change is everyone's responsibility" (A. Johnson, 2021, p. 14). Colleges could consider reviewing the current make-up of technology committees. Other colleges working to address digital equity could consider a multidisciplinary approach that includes involvement from key partners such as librarians and student services staff. These individuals share a unique perspective on student needs and could provide valuable input when decisions need to be made. In addition to reflecting on their own skills and learning needs, leaders could consider developing processes and practices for identifying faculty and staff gaps and providing resources to address these gaps. The five dimensions of digital equity might serve as a framework for developing digital equity practices (Resta & Laferrière, 2008).

Implications for Professional Organizations

Professional organizations in higher education might consider reviewing how digital equity is incorporated into leadership competencies. Many organizations have leadership competencies that address technology; however, finding actionable items for developing these competencies is challenging. Community college leaders are often involved in technology master planning, aware of emerging technologies, and should always be aware of how technology

impacts both the student experience and success. As technologies rapidly change, leaders need to be able to look to organizations for support, knowledge sharing, and opportunities to collaborate. Colleges, such as the one in this study, could provide key insights on addressing digital equity at conferences or workshops and could be highlighted in publications.

Recommendations for Future Research

This study examined policies, practices, and leaders' perspectives at a community college with multiple sites that had been acknowledged for its digital equity initiatives. The topic of digital equity is broad and vast. Digital equity is hard to measure due to many different variables. Further research is needed on how to identify, measure, and share results.

One recommendation is comparing and contrasting policies, practices, and perspectives at different types of community colleges (e.g., urban and rural) or comparing colleges that have been recognized for digital equity initiatives versus colleges that have not. A mixed methods approach with surveys, interviews, and document analysis might provide additional data related to participants' perspectives on digital equity initiatives.

Another recommendation for future research is to explore the effect of human capital on technology. This institution had a long-term president who was passionate about innovation, technology, and serving students. Future research could explore the influence college presidents have on digital equity initiatives. Participants also expressed pride in the college's work toward digital equity. Exploring the role of belonging in digital equity or technological innovation could provide valuable insight for community college leaders.

Finally, many participants discussed artificial intelligence (AI) related to initiatives the college system should consider in the future. The college published an AI policy in 2024, but many other community colleges do not have clear policies on AI use for staff, faculty, or

students. The college also actively provided AI resources and training for faculty and staff to explore ways to embed AI into curricula. Thus, future research could exam how colleges address AI initiatives and inequities.

Chapter Summary

This study explored policies, practices, and leaders' perspectives of addressing digital equity gaps at a single community college system, which had made tremendous strides in recognizing and addressing digital equity gaps. Participants used an asset-based, multidisciplinary approach to identify and address digital equity gaps. This study had two research questions summarized below.

Research Question 1

What policies and best practices have been adopted by a community college to recognize and address digital equity gaps? Participants identified two key policies: the acceptable use policy and the IT Masterplan. These policies helped guide digital equity practices. The institution in this study had a culture of innovation that encouraged individuals to find needs and develop practices to meet these needs. Study findings identified seven promising digital equity practices for other institutions to consider: (a) development of a laptop loan program, (b) creation of the PC repair lair, (c) using embedded success coaches in online courses, (d) using mobile success librarians, (e) offering community-based technology courses, (f) fostering community partnerships for student technology needs, and (g) development of a digital equity rubric. These practices assisted in connecting students to resources.

Research Question 2

What are community college leaders' perspectives of the policies and best practices used to address digital equity gaps? Technology has become a basic need in everyday life and an

essential tool in higher education that should be viewed as a tool to increase access. Although technology can have a powerful impact on community colleges, it cannot replicate human emotions, feelings, or judgment. The voiced perspectives of leaders provide insight into digital equity practices at this institution. Perspectives shared a multidisciplinary approach to addressing digital equity gaps, and findings emphasized that, regardless of technological advances, the focus on students should be unwavering. Effectively addressing digital equity gaps requires an intentional, holistic approach.

Reflecting on the COVID-19 global pandemic carries heavy emotions. Participants shared insights on the lessons learned during the COVID-19 global pandemic, a historically catastrophic event that disrupted everyday life and continues to impact education. The pandemic especially impacted vulnerable, lower socioeconomic students. Issuing stay-at-home orders to an individual who is living paycheck to paycheck while going to school can have devastating effects. The pandemic also highlighted the community college spirit. Leaders at this institution stepped up to meet technology needs during this crisis. Once events began to stabilize, participants in this study looked back at the institution's COVID-era technology initiatives and spent time revitalizing these initiatives more sustainably.

Concluding remarks

The institution has made tremendous strides to develop policy-guided practices to address digital equity gaps. Participants were insightful, passionate, and inspiring. The researcher was not only impressed by participants' talents and expertise, but also by the sense of pride and loyalty observed. As technology advances, further work will be needed, particularly with AI. Continuing a student centered, multidisciplinary approach will be critical as the institution strives to achieve digital equity.

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Appendix A: Alignment Table

Table A.1. Alignment Table

Frameworks	Literature findings on issues and challenges	Literature findings on potential informed strategy	Interview questions
Theoretical framework: overarching world view: Critical theory of technology (Feenberg, 2002)			1, 2, 3, 9 provide insight that could apply to any or all framework categories
Conceptual framework: Five dimensions of digital equity (Resta & Laferrière, 2008)			1, 2, 3, 9 provide insight that could apply to any or all framework categories
1. Access to hardware, software, and connectivity to the internet	Identified in the 1990s, this first level divide persists today (Kronenfeld & Kronenfeld, 2020). Most existing literature is on this specific divide (van Dijk & Hacker, 2003). Income and higher education attainment positively impacts material access to devices (van Deursen & van Dijk, 2019). Low-income individuals may the lack of at-home internet access, limited cell phone data, lack of reliable technology, and lack of access to eBooks and other learning technologies (Sanders & Scanlon, 2021).	Leaders that understand issues related to technology and practice ethical decision-making to ensure equitable access that empowers all learners and educators (International Society for Technology in Education, 2009). Large-scale implementation and access needed. (Pittman et al., 2015).	5
2. Access to meaningful, high quality, and culturally relevant content in local languages	Third level divide Least researched divide due to complexity (Ruecker, 2022). Difficult without addressing other dimensions.	Policies on information sharing Human resources policies ICT policy guidelines Quality assurance policy guidelines Trust building (Resta & Laferrière, 2008)	4
3. Access to creating, sharing, and	Second level divide Students in K–12 schools from predominantly low socioeconomic	Interactive communities Collaborative opportunities	6

Frameworks	Literature findings on issues and challenges	Literature findings on potential informed strategy	Interview questions
exchanging digital content	backgrounds use technology for drills and practice (Warschauer et al., 2004). Students from higher socioeconomic backgrounds use technology for higher-level thinking and analysis (Hohlfeld et al., 2017). Community colleges students have various digital experiences. The number of students from low socioeconomic backgrounds at community colleges continues to grow (Fry & Cilluffo, 2019). Assumption that students arrive with skills necessary to use technology	Flipped classroom (Resta & Laferrière, 2008)	
4. Access to educators who know how to use digital tools and resources	A review of the literature shows a perception in higher education that the responsibility for addressing the digital divide lies with the student (Schone, 2015). Faculty often use technology to do the "same thing as before, but a little more quickly, a little more frequently, or a little better" (Resta & Laferrière, 2008, p. 999).	High quality, sustained faculty professional development Broad support for skill development Opportunity for faculty to network and collaborate Private–Public Partnerships (Pittman et al., 2015; Resta & Laferrière, 2008).	7
5. Access to high-quality research on the application of digital technologies to enhance learning.	As technology advances, needs evolve (Sanders & Scanlon, 2021). Innovation requires both the use of evidence based approaches and the development of new research strategies (Resta & Laferrière, 2008).	Networked communities that include access to experts (Hall, 2017) Partnerships with other institutions (Niederhauser et al., 2018).	8

Appendix B: Interview Protocol and Questions

Interview Protocol

A. Receive interviewee contact information from the assigned gatekeeper
B. Send an introductory email and informed consent. Follow-up phone call if there is no response in 24 hours.
C. Once informed consent is received, schedule a Zoom interview at the interviewees' preferred time. The researcher will use a dedicated calendar to schedule interviews to protect confidentiality.
D. The interviewee will be sent a confirmation link with a Zoom link.
E. Follow the scripted narrative for the interview. This includes the introduction to the study, interview questions, and conclusion.
F. Send a follow-up email with the transcribed interview for participant review.

Introduction to Study

Thank you for meeting with me today. I appreciate your willingness to participate in this interview for my dissertation study. The purpose of this study is to investigate the policies and best practices adopted by community colleges to recognize and address the digital equity gap.

One concept that I am using in my study is that technology is a "pervasive and powerful" dimension in society that is influenced by social values, cultural cues, and politics (Feenberg, 2013, p. 2). I want to uncover common themes and patterns from selected community colleges on how they approached closing the digital divide to achieve digital equity. My study is from an asset-based approach. Rather than focusing on the digital divide, I am very interested in your role and thoughts on the policies and practices your college has developed in an attempt to reach digital equity.

The interview will take no more than 60 minutes and will be video and audio recorded with your consent. All recordings will be kept confidential, and you will be given the opportunity to review the transcript for accuracy. Please know that no identifying information will be shared and that you can withdraw at any point during the interview. In order to protect your privacy and maintain anonymity, please disable your camera and remove your name from the Zoom display.

Do you have any questions before we begin?
Do you agree to participate?
Are you ready to start recording?

Interview Questions

1. Tell me about your own educational journey as it relates to technology. (Background)
    - What is your experience with educational technology?
    - How are you involved in technology-related decisions at your institution?

2. What experience do you have working with students with first-generation students or students from a low socioeconomic background (Background)
    - How do define:
        - culture of poverty?
        - what it means to be poor?
        - underrepresented?
    - How does your experience working with these students impact your technology-related decision-making? (Dimension 2)

3. What policies or practices are in place to identify technology needs for students? (Dimension 1)
    - Who are the key decision-makers at this campus regarding technology needs and practices?
    - What role do you have in deciding what technology is purchased?
    - Can you tell me about the resources available to students who have technology needs?
    - What does the process look like?

4. Tell me about a recent successful technology initiative that addressed a digital equity gap for students at your institution.
    - How was this gap identified?
        - Can you tell me more about that initiative? Might ask:
            - Who was involved in this practice?
              How was this practice implemented?
              How was this practice communicated?
            - What type of training is involved for faculty, staff, or students?

5. How do you assess the digital skill level of students? (Dimension 3)
    - What processes are in place for digital skill building?
    - Can you provide any examples of creating, sharing, and exchanging digital content?
        - Are there processes or policies in place to encourage this practice?

6. How do you assess the digital skill level of faculty? (Dimension 4)
    - What processes are in place for faculty digital skill building?
    - Can you share a recent example?
        - How were faculty supported?
    - What collaborative partnerships are in place for faculty and staff?

7. What research is used in developing technology or digital equity-related policies and practices? (Dimension 5)
    - What opportunities exist at your institution to share research? (Dimension 5)

8. What do you think about these processes and your current policies and practices in addressing digital equity? (RQ2)
    - What do you have in place to monitor/track your adopted strategies to ensure they do not widen the digital equity gap?

9. We have discussed several successful policies and practices in our interview today. I would love to hear your thoughts on a technology initiative that was not integrated well college-wide.
    - Why was this initiative not successful in addressing digital equity?
    - What did you learn from this experience?

10. Are there any policies or practices on addressing digital equity that you think the college should consider in the future?

Conclusion

Thank you for your time today and your responses. I appreciate your valuable insight. For the next steps, I will transcribe your interview. Please anticipate an email so that you may verify that the content is complete and correct. It was a pleasure to meet you.

Appendix C: Informed Consent Note: Created Using Approved KSU IRB Informed Consent Template

PROJECT TITLE:

A multisite case study of decisions and best practices in addressing digital equity gaps

PROJECT APPROVAL DATE:		**PROJECT EXPIRATION DATE:**		**LENGTH OF STUDY:**	1 hour

PRINCIPAL INVESTIGATOR:	Dr. Kathie Sigler
CO-INVESTIGATOR(S):	Vicki Calfa
CONTACT DETAILS FOR PROBLEMS/QUESTIONS:	Dr. Kathie Sigler xxxxx@xxxxx.edu
IRB CHAIR CONTACT INFORMATION:	Dr. Lisa Rubin (XXX) XXX-XXXX
PROJECT SPONSOR:	Not applicable

PURPOSE OF THE RESEARCH:

The purpose of this study is to investigate the policies and best practices adopted by community colleges to recognize and address the digital equity gap. This study will focus on policies, practices, and leaders' perspectives at one community college system that has been acknowledged for digital equity initiatives.

PROCEDURES OR METHODS TO BE USED:

As a study participant, you will participate in a semistructured interview via the Zoom platform. You will be discussing your participation in decision making and practices used at your college to address the digital equity gap. Your identity will be protected throughout the study. During the interview, your camera will be off and no display name will be visible. After the completion of the interviews, you will have the opportunity to verify that the interview transcripts have accurately captured the interview content.

RISKS OR DISCOMFORTS ANTICIPATED:

There are no anticipated risks associated with study participation. Care will be taken to ensure privacy is protected and confidentiality is maintained.

BENEFITS ANTICPATED:

Participation in this study is an opportunity to share knowledge and inform practice which might lead to meaningful change in community colleges.

EXTENT OF CONFIDENTIALITY:

The researcher will not share your information with any other investigators. The researcher will store all data on a password-protected external hard drive. All college and participant data will be deidentified and stored in a safe place for 5 years following the conclusion of the study.

Terms of participation: I understand this project is research, and that my participation is voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

(Remember that it is a requirement for the P.I. to maintain a signed and dated copy of the same consent form signed and kept by the participant).

PARTICIPANT NAME:			
PARTICIPANT SIGNATURE:		**DATE:**	
WITNESS TO SIGNATURE: (PROJECT STAFF)		**DATE:**	

Appendix D: Introductory Email to System President

Dear _____:

My name is Vicki Calfa, and I am a current doctoral student in the John E. Roueche Center for Community College Leadership at Kansas State University. I was first introduced to [the institution] in 2020 by [my professor], who shared an interview you did.

The purpose of my dissertation is to better understand the policies and best practices used by community colleges to address the digital equity gap. In researching community colleges doing digital equity work, [the institution] stands out for doing intentional work in this space. For this study, I would like the opportunity to interview leaders via Zoom across the various college locations, including faculty leaders, who are doing this important work. These semistructured interviews will last approximately 60 minutes. I also would request that you identify a contact who can connect me to the appropriate people to participate from each of your campuses. I am hopeful that you will agree to participate, and I look forward to listening to your valuable insight on decisions and best practices for addressing digital equity gaps.

Community colleges serve a vital role by contributing to the economy, training the workforce, and preparing students academically for transfer to 4-year institutions (Bailey et al., 2015). Students without internet connectivity, up-to-date devices, or digital skills face significant challenges with access, enrollment, persistence, and completion in community colleges. Today, counting the number of existing digital divides can be overwhelming and discouraging. Digital divides exist across many student demographic factors, including gender, race, and socioeconomic status, and new divides are continuously identified as technology advances (Ragnedda, 2021).

You may reply to this email, or you may call me at [phone number]. I will follow up by phone as well using the number listed online.

Thank you for your consideration.

Respectfully,

Vicki Calfa, MSN, RN, CNE, PCCN
Doctoral Student
Kansas State University
John E. Roueche Center for Community College Leadership
xxxxx@xxxxx.edu

Appendix E: Introductory Email to Participants

Dear _____:

My name is Vicki Calfa, and I am a current doctoral student in the John E. Roueche Center for Community College Leadership at Kansas State University. You have been identified by the leadership at [community college] to participate in a study of decisions and best practices for addressing digital equity gaps. This study focuses on an asset-based approach rather than a deficit-based approach and I would appreciate the opportunity to learn more about the important work that your college is doing.

Your participation is completely voluntary. Participants may decline altogether or stop participating at any time, and your information will not be shared and will remain anonymous and confidential. There are no penalties for participating or refusing to participate in the research study.

Interviews will be conducted over Zoom and will take approximately 1 hour of your time. We can schedule this interview for a day and time that will best accommodate your schedule.

I would love to hear your insight on this important topic. To accept or decline, please reply to this email, or you may call me at [phone number]. I will follow up by phone was well using the number listed. I am hopeful that you will agree to participate, and I look forward to listening to your valuable insight on promoting digital equity.

Thank you for your consideration.

Respectfully,

Vicki Calfa, MSN, RN, CNE, PCCN
Doctoral Student
Kansas State University
John E. Roueche Center for Community College Leadership
xxxxx@xxxxx.edu