

Making it Work Anyway: Inspiring Online University Students to  
Stay Connected to Online Coursework Despite Access Barriers

by

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## ABSTRACT

The Internet is poised to open access to higher education for students no matter where they live. However, many students still live in places where barriers keep them from getting and staying connected to online coursework. These barriers include power outages, high internet data costs, and lack of computers or smartphones. BYU-Pathway Worldwide's PathwayConnect prepares students living around the world to matriculate into online certificate and degree programs. When students drop out PathwayConnect, many cite these technical barriers. However, other PathwayConnect students have employed a series of know-hows, or strategies to stay connected to the online coursework. The aims of this action research dissertation were to discover these specific know-hows, design a way for PathwayConnect students to read and discuss them in the Canvas course shell, and measure the impact of sharing the know-hows. While quantitative data analysis showed no change in student persistence between the treatment and control groups, students in the treatment group reported high engagement with the know-hows. Moreover, qualitative data analysis revealed extensive use and adaptation of the know-hows among the treatment group.

## DEDICATION

To PathwayConnect students worldwide, who are finding their voice: “And they shall build the old wastes, they shall raise up the former desolations, and they shall repair the waste cities, the desolations of many generations (Isaiah 61:4, King James Bible, 2013).

## ACKNOWLEDGMENTS

This study provided a way for me to amplify the voice of one of the best resources at my disposal as a curriculum manager: the students. Tate and Warschauer emphasize the importance of the human resource as part of the conceptual framework of resources that shape digital inclusion (2022). The student is that resource, but supporting the student requires physical and social resources. While I can't fix internet infrastructure problems in developing nations or give a laptop to every student, I can create social resources. I can facilitate the delivery of know-how wisdom to students. I am indebted to my colleagues at BYU-Pathway Worldwide for helping me discover how to magnify student voices to help their peers find quick wins over early losses with online learning.

I am grateful for the people who supported me in this endeavor including administrators and colleagues at BYU-Pathway Worldwide, my dissertation chair and committee at Arizona State University, and most especially, to my wife and children, who gave up time with me so I could pursue this dream. Thank you!

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## CHAPTER 1

### INTRODUCTION

In today's post-COVID-19 world, online learning in higher education may be more understood than ever before as a means through which organizations, schools, and universities can attempt to offer coursework in remote locations (Avanesian et al., 2021; Tate & Warschauer, 2022). Diaz-Infante et al. (2022) report that from 2012 to 2020, full-time undergraduate students in online degree programs jumped from 4.6 million to 12 million. However, getting distance education from provider to student involves spanning a digital divide that in many places is still too wide (Saavedra, 2021). According to UNICEF, "2.2 billion children and young people aged 25 years or less – two thirds of children and young people worldwide – do not have an internet connection at home" (UNICEF & International Telecommunication Union, 2020, para. 1). Henrietta Fore, UNICEF Executive Director further suggested, "Lack of connectivity doesn't just limit children and young people's ability to connect online. It prevents them from competing in the modern economy. It isolates them from the world.... Put bluntly: Lack of internet access is costing the next generation their futures" (UNICEF, 2020, para. 3).

What ignites my passion for this topic are reports from BYU-Pathway Worldwide field personnel of students who must skip a meal to buy internet or where the cost of the internet exceeds the cost of tuition. In countries like Zimbabwe, Uganda, Papua New Guinea, and Sierra Leone, most of our students must access a computer and the internet from a metered connection where congested lines make downloading online coursework

painfully slow, at an average of ten seconds per page (Cannon, 2023). Such limitations make it very difficult for students to access and persist in their online programs.

The digital divide was a term coined in 1995 (Morrisett) to describe the gap between those with access to computers and the internet and those with limited access or no access (Stoicheva, 2000). Today, almost 30 years later, as online education providers compete for students worldwide, this problem still exists, but it has manifested into a somewhat different gap. Higher education institutions can assume increased global access, but they must also consider limitations to stable and consistent access. Higher education institutions that want to offer online education that is equitable must devise creative ways to overcome new forms of the digital divide, or their best intentions in offering online coursework will stay out of reach for many.

COVID-19 school shutdowns around the world shined a light on this inequity in access when higher education students without computers, high-speed internet, or technology support at home found themselves disconnected from their schoolwork and falling behind (Yang, et al., 2022). Clearly, educators whose ethic involves providing global reach must continually push to address the current-day digital divide.

### **Accessing and Completing Higher Education Around the World**

The United Nations supports bringing higher education to the world and has resolved that obtaining a higher education is a human right. In 1976, the United Nations adopted and opened for signature the International Covenant on Economic, Social and Cultural Rights (United Nations, 1976). The purpose of this accord was to affirm the inherent dignity and rights of all people across the world to live in conditions that

promote peace and prosperity in economic, social, and cultural spheres. This multinational effort recognizes “the right of everyone to education. They agree that education shall be directed to the full development of the human personality and the sense of its dignity, and shall strengthen the respect for human rights and fundamental freedoms” (United Nations, 1976, Article 13.1).

The International Covenant on Economic, Social and Cultural Rights calls for a free and compulsory primary education and a varied, free, and available secondary education. The accord then turns to education, saying higher education “shall be made equally accessible to all, on the basis of capacity, by every appropriate means, and in particular by the progressive introduction of free education” (United Nations, 1976, Article 13.2.c).

Despite the United Nations’ affirmation that the entire world population should have access to quality higher education, the gap has continued to grow between students in higher socioeconomic regions and students in poorer regions. As Table 1 shows, in 2010, 30% of North Americans had attained higher education, compared to 4% of Africans, a gap of 26%. By 2050, that gap is predicted to widen to 30% (Roser and Ortiz-Ospina, 2013).

**Table 1***Percent of Higher Education Attainment of those Aged Fifteen or Older*

Region	2010	2050
Africa	4	11
Australia	25	37
Europe	17	30
Latin America	13	26
North America	30	41
North Asia	28	49
South Asia	12	23

Because these inequities correlate to economic power (Avanesian et al., 2021; Marginson, 2016), educators must be aware of this and do what they can to provide equitable access to their online offerings.

Some universities have initiated efforts to reach more students, but these efforts have resulted in minimal impact. For example, universities in Africa have tried to expand their footprint using online coursework (Dosso, 2022; Jowi, 2022; Makoe, 2022), but they struggle to keep costs down and quality high (Fischer, 2019). Unicaf, a university in Cypress, offers online higher education degrees in Africa in partnership with several U.K.-based universities (Unicaf University, 2023; Fischer, 2019). Unicaf hopes to reach 100,000 students by 2023, but the tuition is unaffordable for the poor (Fischer, 2019). In addition, Unicaf gives a tablet to every student (Fischer, 2019) which adds to their cost to teach each student.

### *Development of Distance Learning*

Distance learning has developed over time due to the affordances of new technologies and pedagogical approaches. Advances in high-speed connectivity and tools that support online learning have helped some institutions expand collaborative approaches and become more sophisticated in learning designs (Means, et al., 2014).

Today, some universities have figured out ways to offer a dynamic online experience that helps students engage with one other and their instructor. Interesting synchronous and asynchronous communications help students learn how to ask questions, negotiate meaning, demonstrate proficiency, and support one another (Means et al., 2014).

Distance learning first emerged as correspondence education. This allowed people to access coursework from remote locations, but the coursework was limited to what could be printed on paper and mailed to students. This method offered no opportunities for collaboration with other students (Sumner, 2000). By the mid 20th century, distance educators added electronic media to curriculum, including images, moving pictures, and sound and distributed learning content through broadcast television. One of the first attempts at this was the British Open University, which offered courses over broadcast television in the U.K. Meanwhile, U.S. students could engage with the Sunrise Semester, a morning television program featuring lectures as part of distance learning courses (Miller, 2000). These efforts added a dynamic factor and depth not achievable on a printed page, but the coursework was still didactic. Then, in the late 20th century, as large business and government interests began to realize the power of personal computers, some higher education institutions explored ways to produce learning content cheaper

and the number of courses available increased. However, this curriculum relied on transmission through static media such as floppy disks and CD-ROMs, so any sort of just-in-time or authentic collaboration was not plausible. Digital content was expanded as the early internet allowed distance education systems to provide students with expanded, dynamic digital content that was delivered directly to students' homes, but the content was a one-way transmission and slow internet speeds limited the use of media. As the internet grew faster and web-based applications became more powerful, some education systems explored opportunities for students to participate in dynamic two-way interactions like document collaboration and video conferencing. Now, with the current age of distance learning with continual miniaturization of computers, the prolific advent of sophisticated applications that support student-to-student engagement, and the ever-increasing availability of cellular networks and high-speed Wi-Fi, educators have the technology to design learning experiences that allow students to take online coursework on a mobile device as long as they have capable internet to do so.

Amid these technological advances, some education providers have expanded their reach by offering online degrees (Means, et al., 2014). For example, National Technological University provides online graduate degrees to working engineers. Corporations partner with National Technological University to improve the engineering skills of their employees, and to support employees to get a graduate degree. This illustrates the importance of an education-to-business pipeline and how business needs can drive educational innovation (Miller, 2000).

With the advent of improved technology tools for online course delivery, some universities have established online education as an institutional goal. In the United States, enrollment in online and hybrid (mixed campus and online) degree programs grew from 2012-2019 by 33% from 4.6 million to 6.1 million. The universities with the highest growth in enrollment in online learning attempted innovative approaches (Diaz-Infante et al., 2022). For example, Southern New Hampshire University, Western Governors University, and Liberty University sought to accommodate learners by allowing them to start at many points during the year. Southern New Hampshire University adopted experiential learning approaches and included hands-on projects, internships, research projects, and service learning (LeBouf, 2023). Western Governors University explored ways students could complete more credits in less time by allowing students to complete competency exams when they were ready (Means et al., 2014). This change also meant that students could pay a flat tuition fee for a six-month term and enroll in as many credits as they thought they could handle at a time (Western Governors University, 2023). Liberty University and Grand Canyon University differentiated themselves as faith-based universities. Liberty University catered to military veterans by offering transfer credit evaluation for military training (Liberty University Online, 2023). According to the college comparison website, Niche (2023), six years after their graduation, between 82-89% of graduates from all four of these universities were employed. However, to those concerned with the current-day digital divide, the low graduation rates of these institutions (between 37% to 54%) is alarming (Niche, 2023).



Thus, while these universities continue to lead in enrollment, their ability to retain their students remains a challenge.

### ***Supporting Equitable Access to Learning***

National educational organizations that promote the affordances of online learning have written policies and standards to support the design of distance learning programs. The International Society for Technology in Education has published ISTE Standards for Education Leaders (2019). These standards prompt leaders to find ways to “support educators in using technology to advance learning that meets the diverse learning, cultural, and social-emotional needs of individual students” (p. 7). They also call for educational leaders to “ensure all students have access to the technology and connectivity necessary to participate in authentic and engaging learning activities” (p. 7). In a similar vein, the Online Learning Consortium, a group of higher education leaders and innovators interested in advancing the reach and impact of distance learning, suggests that “any learner who engages in online education should have, at a minimum, an education that represents the quality of the provider’s overall institutional quality” (2023, The Drive Behind the Online Learning Consortium section). This means brick and mortar schools and universities seeking to establish online programs must make every effort to ensure that online learning opportunities are as high quality as the programs they deliver in person. To this end, the Online Learning Consortium has developed five pillars of quality online education: learning, faculty, students, scale, and access. Related to the access pillar, the organization suggests the goal should be “to provide meaningful and effective access throughout the entire student’s life cycle” (Online Learning Consortium,

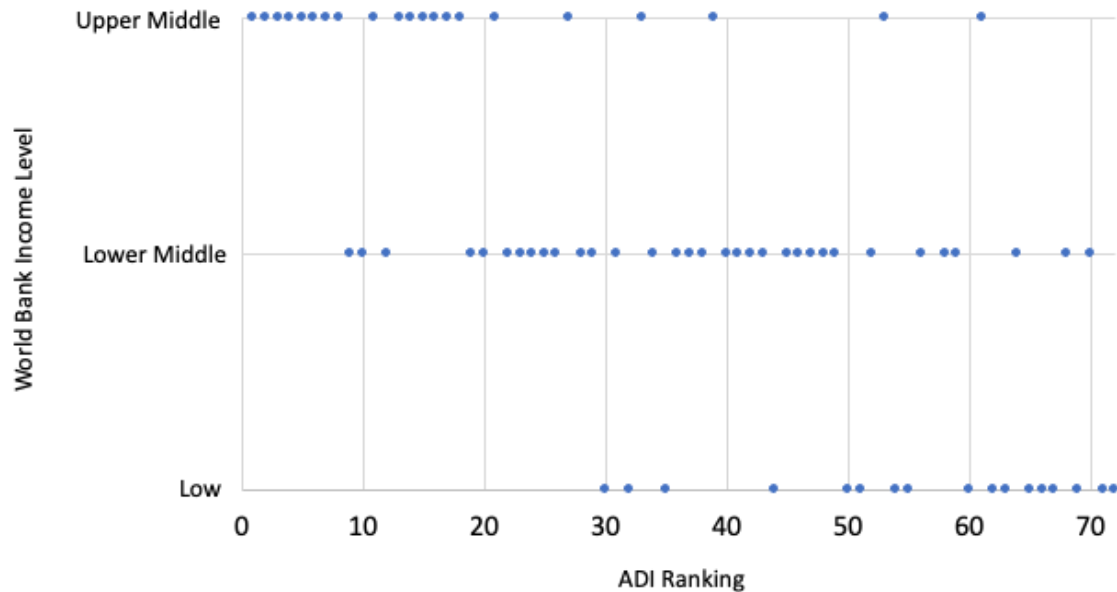
2023, Access Pillar section). Using this definition, access includes giving students access to academic (e.g., tutoring), administrative (e.g., disability services), and technical support (e.g., help desk). The access pillar is an important check for schools wishing to provide equitable access to their online coursework.

### ***The Internet Affordability Gap***

Despite continual improvements to the internet, hardware, and software, the innovations to deliver an online degree program effectively, to every corner of the world, has not kept pace. In particular, the availability of affordable high-speed internet, also called broadband, continues to lag in underdeveloped countries. The Alliance for Affordable Internet (A4AI) tracks this trend with the Affordability Drivers Index or ADI (Alliance for Affordable Internet, 2021), which involves scoring each country with a composite index of two subscales. The first measures the extent of a country's developing broadband infrastructure as well as its policies favoring future development. The second measures the extent to which its citizens can access broadband internet. The lower the ADI score, the better a country is doing with providing affordable high-speed internet to its people. A4AI tracks the ADI and World Bank income classifications in seventy-two countries. Figure 1 presents a cross reference of the ADI scores with the World Bank income classification and demonstrates that people in poorer countries have less access to high-speed internet. As poorer countries struggle to provide internet access, their citizens struggle to participate in distance education learning and remain underprepared for entering the workplace.

**Figure 1**

*World Bank Income Level by Affordability Drivers Index (ADI)*



**BYU-Pathway Worldwide and PathwayConnect**

I work as a curriculum manager for BYU-Pathway Worldwide (BYU-PW), which is an educational institution that is part of the Church Educational System of the Church of Jesus Christ of Latter-day Saints. The mission of the organization is to:

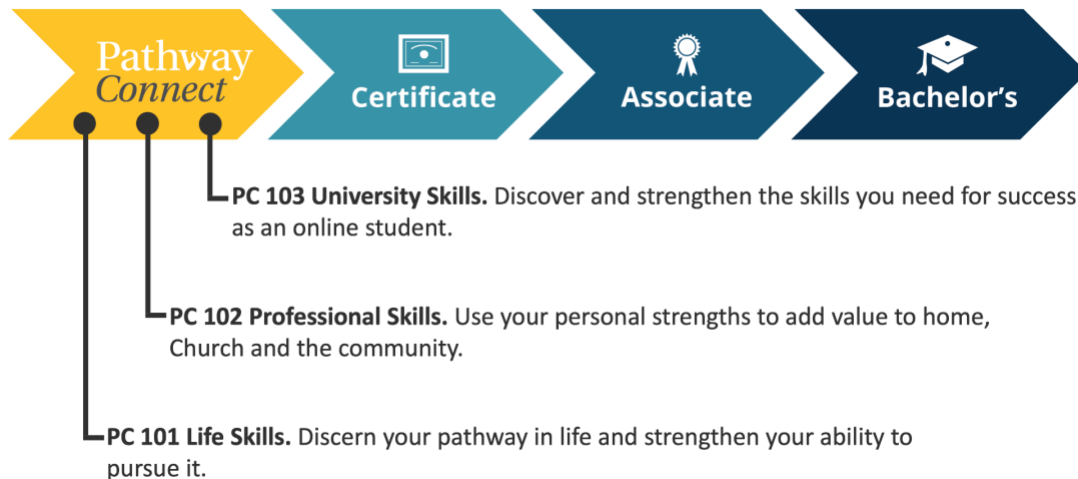
develop disciples of Jesus Christ who are leaders in their homes, the Church, and their communities. The organization does this by (a) helping students get the gospel down into their hearts, (b) helping them become capable learners, and (c) preparing them to lead and support families (BYU-Pathway Worldwide, 2022a, p. 1).

To fulfill this mission, BYU-PW offers access to online higher education degrees to people living around the world.

I am a curriculum manager, and in this role, I am responsible for overseeing the content of the first three courses every student must take prior to pursuing a bachelor's degree. The PathwayConnect program includes three courses (PC 101, PC 102, PC 103) that are designed to prepare students with foundational life skills, professional competencies, and university skills so they can be successful online students, and so they can leverage their coursework to earn more money to support themselves and their families. See Figure 2.

**Figure 2**

*PathwayConnect and the Online Certificate and Degree Programs*



The primary objective of PC 101 is for students to attain the life skills needed for their future success in the program such as time management and financial planning. It is an inward-facing course where students examine their own situation and strengthen their ability to manage their lives. In PC 102, students turn outward to learn professional and career development skills so they can present themselves well in job-finding and entrepreneurship situations. Finally, PC 103 students learn study skills and how to be

resourceful and persistent as an online student. They take this course while beginning the first course of their next program, which is an introductory certificate that leads into more advanced courses in the online associate and bachelor’s degree. In my capacity as curriculum manager, one of my most significant responsibilities is to certify that the curriculum for the three courses is appropriate for the PathwayConnect program and addresses the course learning outcomes. For this study, I will be exploring how PC 101, the first course students take when they register for our program and the gateway for their future success, can be reshaped to improve retention rates. See Table 2 for an overview of the courses and Appendix A for a comprehensive list of the outcomes, topics, and weekly sequences.

**Table 2**

*PathwayConnect Courses and Abbreviated Outcomes*

Course	Major Course Outcomes
PC 101 Life Skills	Learn how to learn; manage time and finances; overcome thinking errors; learn perseverance; write basic paragraphs and essays; perform arithmetic with whole numbers and decimals; calculate percentages; solve simple equations; find perimeter and area; demonstrate basic spreadsheet use
PC 102 Professional Skills	Manage career plans; complete a resume; network with professionals; write a professional resume; interpret graphs and slope; convert units; calculate interest
PC 103 University Skills	Create a wellness and persistence plan; learn study skills; evaluate academic articles; be resourceful; make a graduation plan; apply for matriculation

As a part of my responsibilities as curriculum manager of the PathwayConnect program, I work with an instruction manager (Jane), and a program designer. We have recently hired Abish as the program designer, and she started in May 2023. The three of

us are the program council, and I am the program lead and chair of the council. My responsibilities include coordinating the program's curriculum maintenance and improvement projects. I rely on Jane to manage the operations, evaluation, and training of instructors and graders. I also rely on Abish to help us make design decisions based on instructional design best practices. Abish reports to BYU-Idaho and is an important connection between our program council and the resources offered by BYU-Idaho, who maintains our learning management system and educational technology support systems. This includes the Canvas Learning Management System.

### ***The Development of BYU-Pathway Worldwide***

The Church of Jesus Christ of Latter-day Saints supports its members by offering higher education through campus-based schools including Brigham Young University in Provo, Utah, Brigham Young University Hawaii, Brigham Young University-Idaho (BYU-Idaho), and Ensign College in Salt Lake City, Utah. These schools are part of the Church Educational System (CES). While these institutions saw growth during their first 100 years, they only were able to serve students who could come to their campuses. As the internet became a viable means to engage students in online coursework, CES gave permission for BYU-Idaho and Ensign College to create fully online degrees to reach as many Church members as possible.

By 2009, BYU-Idaho offered several online degrees, but many students living outside the United States dropped out in their first few terms. To better prepare students for the unique learning experiences offered in online degrees, President Kim Clark formed the PathwayConnect program, a year-long, online learning experience aimed at

helping students overcome barriers of cost, access, and confidence. As a result of President Clark's visioning to increase access, BYU-Idaho, the educational unit that owned PathwayConnect at the time, lowered the cost barrier by basing PathwayConnect tuition on the gross domestic product of the student's resident country. Today, tuition is now as low as \$1 per credit for students who live in countries like Haiti and Venezuela. If students pass PathwayConnect courses with a 3.0 GPA, they can keep that same tuition rate through the end of their online bachelor's degree. Additionally, Clark lowered the access barrier by removing two admissions tests: the ACT and the TOEFL for English Language Learners. Now, if students complete PathwayConnect with a 3.0 GPA, they will not need to take these tests to be admitted to a BYU-Idaho online bachelor's degree program. Finally, Clark tried to instill confidence in students through the PathwayConnect courses themselves.

When this program was first designed, the original course sequence was Life Skills, Basic Writing, and Personal Finance. The Life Skills course taught how to engage with the learning management system and contained lessons on study skills, lifelong learning, career exploration, time management, and goal setting. Students moved through these courses in a cohort and met once a week for an hour to discuss topics from their course and encourage each other. The approach worked as applied from 2009 to 2017 and resulted in increases in student enrollment from fifty students to nearly 40,000, or 79,900% (Eyre, 2020).

Due to increased enrollment, in 2017, the Church Educational System decided to create BYU-Pathway Worldwide (BYU-PW). The board charged BYU-PW with

“responsibility for all online certificates and degree programs offered within the Church Educational System” (BYU-Pathway Worldwide, 2022a, p. 3). BYU-PW is responsible to recruit, prepare, enroll, advise, mentor, handle tuition, communicate with, and provide technical support for students in the BYU-Idaho and Ensign College online degree programs. With this responsibility, BYU-Idaho and Ensign College own their curriculum, but BYU-PW supports the delivery of the curriculum around the world. Ownership of the three-course PathwayConnect program was given to BYU-PW, and BYU-PW has continued to charge the same low tuition.

### ***The Hidden Many***

When BYU-PW was formed, its new president, Clark Gilbert, established the organization to serve “the hidden many” (Walch, 2019, “Stopouts and Skeptics” section). By our definition, the hidden many are the segment of the church’s membership that have historically not accessed higher education due to cost, confidence, and access barriers. However, helping local church leaders understand the importance of reaching members, no matter where they reside, was difficult at first. The former commissioner of the Church Educational System, Kim B. Clark, recalled an interview with a local church leader in Washington D.C. The leader saw no need for BYU-PW’s all-online certificates and degrees since he had twenty-five young adults in his congregation successfully attain scholarships at a local junior college. Clark then asked the leader if he had youth who were struggling and not making progress in their lives educationally and who may be struggling to launch a career. The leader responded that he had thousands of those. Clark



then proclaimed that BYU-PW was established to target exactly those members (Clark, 2018).

### ***Worldwide Outreach of BYU-Pathway Worldwide***

In the United States, approximately 50% of church members domestically and 80% internationally do not have an undergraduate degree (Ashton, 2023). Presently, BYU-PW serves over 60,000 students in 188 countries. 57% are female, 48% are over the age of 31, and 64% live outside the United States (BYU-Pathway Worldwide, 2022b) The organization is striving to fulfill a two-pronged strategy: (a) to serve the hidden many, (b) to operate in every country in which the church has congregations (BYU-Pathway Worldwide, 2021). As the curriculum manager of PathwayConnect, the first three courses that all BYU-PW students take on their online degree journey, I am tasked with the successful initiation of students into what can be a new world of online learning. Numbers have grown. By Fall Semester 2023, over 11,000 students from around the world enrolled in the first course (PC 101). I am keenly aware that I must keep as many students from dropping out as possible so they can go on to attain certificates and a degree and succeed when they enter their professions. Table 3 illustrates the percent of global regions represented by PC 101 students in Fall 2023.

**Table 3**

*Fall 2023 Student Enrollment in PC 101 by Church Area*

Global Region	Students	%
Africa	4501	39
Asia	1239	11
Europe	213	2
Latin America	2184	19
North America	3102	27
Pacific	431	4

**Problem of Practice: Retention**

In my role as curriculum manager, I monitor student performance and course rating trends and adjust as needed. I also review feedback on the performance of PathwayConnect from various stakeholder groups, manage maintenance and improvement projects, and periodically report on the program relative to annual institutional priorities. The most relevant feedback has come from students who live in remote corners of the world, as well as the BYU-PW administrators, some of whom live outside of the United States in countries where we have many students. Much of their feedback centers around one problem: we don't retain enough students. Action research involves iterative attempts or cycles to address a problem of practice. Researcher-practitioners study the problem by consulting relevant literature and data to formulate and test an innovation meant to attenuate the problem (Mertler, 2014). What they learn in this

process informs future cycles of inquiry. Prior to this study, from 2018 to 2021, the PathwayConnect Program Council engaged in two cycles to increase retention.

### ***Cycle 1: Changes in Curriculum***

In the first cycle, our innovation was to find ways for students to engage with their certificate and degree program sooner by having them take the first course of their first certificate at the same time they took the third course in the PathwayConnect sequence. We also redeveloped the curriculum of the entire PathwayConnect program so it focused on a more holistic college preparation with specific emphasis on choosing and enrolling in the first certificate during the third course. The old course sequence started with a life skills course, then moved into remedial writing and remedial math courses. This solution did not focus on the students' overall growth and preparation for college. We completely redesigned the PathwayConnect curriculum from the ground up to integrate basic math and writing into a life skills course (PC 101) and a professional skills course (PC 102). We followed that with a 1-credit university skills course (PC 103) that was taken concurrently with the first course of their next online program, an introductory certificate in applied business, health, technology, and other fields (See Appendix A).

We felt this change in design would give students added confidence as they practiced writing and math with helpful soft skills like time and financial management, goal setting, teamwork, and career development. We also felt that exposing students to their first certificate during PathwayConnect's third term would create a bridge between certificate and degree coursework and our program, thus leading to better retention. This resulted in an increased retention rate of five points (BYU-Pathway Worldwide, 2023b).

During this time, it is important to note that the student population was rapidly changing to include students from more countries.

### ***Cycle 2: Change in Course Design***

Our second attempt to increase retention was designed to help students accelerate their progress and complete academic milestones faster. This innovation was prompted by student feedback about time being the number one reason for withdrawing and by research that found when universities shortened the length of courses from 14-16-weeks to 6-8 weeks, student persistence rose (Diaz & Cartnal, 2006; Durdella & Durdella, 2009; Wyatt, 2016). For this innovation cycle, we offered 7-week courses instead of 14, and we changed the instructional model so that instructors spent their time coaching and supporting students and graders handled the grading. When Milton Camargo was appointed curriculum vice president of BYU-PW in 2019, he cited his own experience with global online learners and emphasized the limited number of hours many of them had to devote to education. He then criticized the online curriculum for having too many assignments that seemed like busy work. He challenged us to rethink our approach by considering the realities of our global students, the majority of whom were over the age of 30, had family responsibilities, held full time jobs, and had many other life demands. In addition, many of our students in poorer countries struggled to maintain regular internet access. They had to ration their internet data, work at night when it was cheaper, or travel to find a connection. From this awareness, I coined the term “weekly time budget” to help me describe these limitations. With Milton’s guidance, we set the students’ weekly time budget for education to around 10-15 hours a week. As we

contemplated these temporal demands on students, we realized our curriculum had too much busy work, which may have been driving some students away. We retooled the courses so they would achieve the same outcomes in seven-week blocks instead of fourteen-week semesters, all the while not increasing demand on the students' weekly time budget. To do this, we made sure assessments were clearly mapped to outcomes, and that associated readings and practice activities were clearly mapped to the assessments. Anything that seemed redundant or extraneous was relegated to the periphery as optional or simply removed. In addition, we designed many of our lessons to help learners preview what was coming, evaluate their readiness for it, and skip right to the assessments if they felt ready.

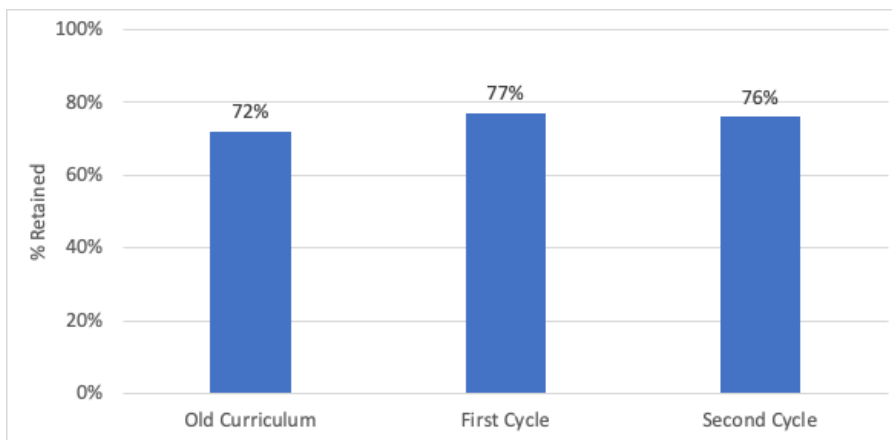
While we streamlined the courses and placed them on a block schedule, we also introduced a new instructional model whereby the instructor did not grade but spent all their time reaching out to students to both prepare them for the course's expectations and respond to their performance when they needed help. We hired graders to evaluate students' work and give them feedback. In this new model, graders graded submissions from all sections in a central queue. They also provided feedback using feedback templates. Instructors spent their time monitoring student progress in one course section by constantly scouring the grade book, looking for issues that arose, and reaching out to individuals or groups to remind, encourage, and offer help. In addition, instructors continued to communicate with students through regular announcements.

In 2021, we piloted block courses, bundled with instructional teams, in PC 101 and PC 102 and discovered that students in the new versions of the courses did as well as

students in the traditional versions when looking at GPA (BYU-Pathway Worldwide, 2022c). We were excited by this result because it meant our students were accomplishing the same course outcomes with the same grades, but in half the time. In many developing economies where access to affordable higher education is scarce, earning a PathwayConnect certificate quicker meant that students could use that credential to look for what we call employment gains. This includes getting a job, securing a better job, getting a raise, or starting or growing a business. However, while by the end of PathwayConnect, approximately 40% of our students reported an employment gain, this effort did not result in higher student retention from PC 101 to PC 102. See Figure 3.

**Figure 3**

*Cycle 1 and 2: Average % of PC 101 Students Retained into PC 102*



***Current Status of Retention***

Given only small changes in retention through two prior iterative efforts, the PathwayConnect program council was still committed to reducing student attrition in the three courses. In response to our commitment to continual improvement, I reviewed responses from a survey issued to students upon withdrawing from the program from

September 2021 to September 2022. In the survey, students could choose one of six reasons for withdrawing: time, not right for me, financial, health issues, technical, and other. I wondered if the economic situation might have some impact on a student's reason for withdrawing since the Alliance for Affordable Internet indicated a strong correlation between internet affordability and a person's ability to access the internet in their country (Alliance for Affordable Internet, 2022). Though no definition of technical was given in the survey, I wondered if students from poorer countries would select the term when taking the survey.

To help with this analysis, I recorded the Human Development Index (HDI) of each withdrawing student's country so I could see the relationship between a student country's HDI and the percentage breakdown of reasons for withdrawing from PC. The United Nations Development Programme (2022) uses the Human Development Index (HDI) to track the developmental level of countries. Three dimensions, longevity, education, and standard of living, include indices that are combined to create the HDI. The indicators that feed these indices are life expectancy at birth (longevity), expected years of schooling and mean years of schooling (education), and gross national income (GNI) per capita (standard of living). The purpose of the HDI score is to promote policy debate where, for example, a country may have a high GNI, but a low HDI score. The HDI ranks the countries by their HDI. The list is subdivided into four development index groupings: very high (1-66), high (67-115), medium (116-159), and low (160-191).

Table 4 shows the reasons for withdrawing from PC, broken down by the HDI Ranking of the students' countries. I noted the inverse for the reason Not right for me

when compared to Technical. I wondered if students in poorer nations wanted to stay, but their technical issues prevented them from doing so. Further investigation of the clarifying comments left by the students revealed that those who identified Technical as their reason for withdrawing frequently cited getting a laptop computer and a good internet connection as barriers.

**Table 4**

*Reasons for Withdrawing from PathwayConnect by HDI Score*

Reason for Withdrawing	% of Respondents by HDI Ranking			
	Very High	High	Medium	Low
Time	36	45	45	35
Not right for me	21	9	8	8
Financial	10	15	14	18
Health Issues	10	7	7	6
Technical	3	6	10	16
Other	20	17	17	16

Among those who identified Technical as their reason for withdrawing, students in lower HDI countries generally struggled more with access-related issues (See Table 5). Access-related issues were technical problems that kept students from connecting to the online coursework. Device issues like computer problems or lack of a computer or smartphone were more prevalent for students in lower HDI countries. Internet issues like connectivity problems or high data costs peaked in medium HDI countries. Surprisingly, computer literacy issues followed the reverse pattern of device issues with a higher percentage of students in very high HDI countries than in the other HDI categories. These data suggested that access-related issues were a significant contributor to students’



technical reasons for withdrawing. Other issues students mentioned in the *technical* category included accidental or incorrect enrollment into the wrong course, health, financial, unresolved support tickets, time, and not a good fit.

**Table 5**

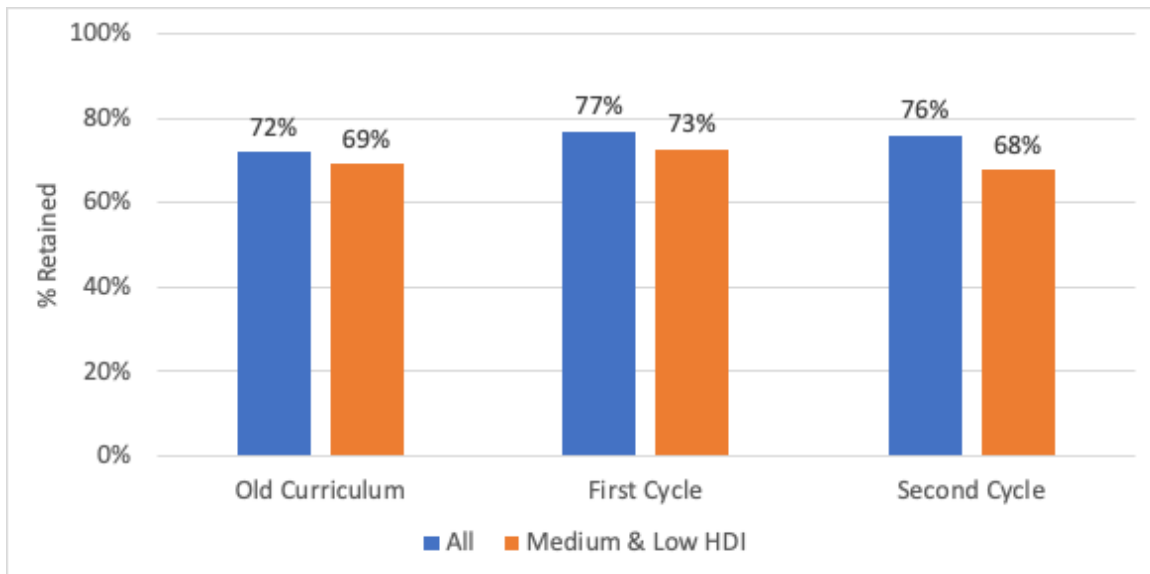
*Access-Related Issues Identified by Those Who Withdrew for Technical Reasons*

Access-Related Issue	% of Respondents by HDI Ranking			
	Very High	High	Medium	Low
Device	.18	.29	.34	.50
Internet	.06	.13	.31	.16
Computer Literacy	.11	.05	.03	.02
Total	.35	.47	.68	.69

Figure 4 illustrates the same retention numbers from Figure 3, but also includes a subset of the students who live in medium or low HDI countries. This shows that retention has fallen in those countries at a greater rate than the total population from the first to the second project. There is a need to focus on students in these poorer countries to boost retention, particularly as it has to do with access-related issues. This is a need that I can work on as a researcher-practitioner who can enhance the curriculum to speak to these issues.

**Figure 4**

*Average % of PC 101 Students Retained into PC 102 with Medium and Low HDI Scores*



### **Know-Hows**

We are aware that know-hows exist in pockets in the BYU-PW student population. Stories abound of students from poorer countries who are driven to access and complete the PathwayConnect program. As an indication of how know-hows impact student success, success stories are frequently featured in BYU-PW's online blog to inspire students and build their confidence. Some stories depict how students have used their creative genius to find computer time, get access to the internet, save money on data costs, and prioritizing coursework.

In 2012, Elisha T. Joseph left his home in Nigeria to move to Odorkor, Ghana so he could participate in PathwayConnect. At the time, PathwayConnect was not available in Nigeria. When he arrived in the city, Elisha had no job and no prospects, but he was determined to complete PathwayConnect and earn admission to an online degree program

from BYU-Idaho. He wanted to become a lawyer. Elisha found volunteer work at a call center operated by the Church of Jesus Christ of Latter-day Saints. In exchange for eight hours of daily volunteer work, he learned business skills and was allowed to use the call center's computers for his online coursework. In 2013, he completed PathwayConnect and matriculated into the applied management bachelor's degree program. At home, Elisha acquired an internet connection, but he was forced to work on his assignments at night because data was cheaper when demand was low. Still, periodic power outages that disallowed him to use his computer slowed his progress. "Of course, there were days I felt dispirited with my studies," he said, "but with the help of fellow course mates and friends, my spirit was energized to continue and persevere until I graduated [with a bachelor's degree], despite the challenges I encountered" (Conrad, 2020, "The Rewards of Sacrifice" section).

Other Pathway students have found ways to connect to the internet and participate despite obstacles. In Uganda, Claire Namusisi used an internet cafe until her brother gave her a smartphone, which she used to continue studying online. Today, she is nearing the completion of a certificate in Teaching English as a Foreign Language (Price, 2022). In Sierra Leone, Mohammed Keifala Bayoh borrowed computer time from a missionary and continued his studies for a certificate in agribusiness (Johnson, 2021). In Ghana, Bartholomew Hotor worked through three different internet service providers to find enough bandwidth and connection to get his assignments done; this in the face of open skepticism about the worth of his online program from those living around him. His diligence paid off when he graduated with a bachelor's degree in 2018 and went on to

attain a master's degree two years later (Teare, 2021). Despite the obstacles Elisha, Claire, Mohammed, and Bartholomew faced with accessing their online coursework, they stayed connected and finished their educational endeavors. They used strategies to persist and find success. As I heard these and other stories, I realized that sharing students' creative solutions could be helpful in the retention challenge. I wondered how I could go about finding more of these strategies and what it would take to help all the students who were struggling to access their coursework to adopt the strategies from their classmates.

### **Dissertation Study Purpose and Research Questions**

Is there a way to spread the wisdom of students like Elijah, Claire, Mohammed, and Bartholomew, who found ways to stay engaged with the online curriculum? How could I get them to teach their strategies to other students? Could doing this lead to greater retention?

Studies have found that online students can find ways to improve their ability to engage with the systems that serve their coursework (Lee et al., 2013, 2019). Self-regulated learning (SRL), a theoretical framework that links student success with their ability to regulate key elements in their approach to learning tasks, has explained this (Zimmerman, 1990). SRL involves students planning a learning approach, monitoring their own progress, choosing appropriate strategies and making adjustments, and reflecting or reacting to outcomes (Pintrich, 2000). Lee et al. (2019) coined the term "know hows" (p. 30) to describe the specific strategies or behaviors online students develop and use to persist in their university studies. Lee et al., (2019) defined know-hows as creative strategies students use. Examples from the study included knowing

where to access online course content, how to play back videos at a higher speed to save time, how to study for exams, what to do when they get a poor grade, and where to find emotional support. In this study, students developed know-hows through experience, adopted know-hows from other students in the course, and drew on the experiences of students who took their courses in a prior semester (Lee et al., 2019).

Encoding wisdom into the curriculum of a course is a form of reification. Wenger (1998) posited that reification is both a blessing and a curse. Reifying know-hows into a teachable curriculum may be a good start at exposing this wisdom, but according to Wenger, "...the codification of knowledge may create the illusion of a simple, direct, unproblematic relation between individual learners and elements of a subject matter" (1998, p. 264-265). In other words, what might have worked for Elijah, Claire, Mohammed, and Bartholomew might not work for everyone. This message from Wenger (1998) warns that students could assume a literal interpretation of reified knowledge and thus become dependent on the specific way it is presented to them. This, according to Wenger, can lead to "a brittle kind of understanding with very narrow applicability" (Wenger, 1998, p. 265). Wenger does not claim that reification is bad, but that it should be balanced with opportunities to negotiate meaning. In other words, the challenge in reifying know-hows is to help students shape a know-how to fit their specific needs within their unique context. Students who are self-regulated learners engage with new material by monitoring and choosing strategies that work given their context (Pintrich, 2000).

As the manager of the PathwayConnect curriculum, my primary responsibility is to manage the static web pages that present content in our three courses. As such, the innovation that was explored through this action research study was the placement of student know-hows in five pages throughout the PC 101. The know-hows came from former PC 101 students who found ways to stay connected to the online coursework despite facing technology barriers. In addition, each page contained reflection questions and an opportunity for students to engage in an asynchronous discussion about the know-hows using the questions. Throughout the rest of this dissertation, I will refer to this innovation as the Staying Connected Lessons. The research questions that guided this study are given below. RQ1 and RQ2 were dedicated to discovering the know-hows and designing a way to share them.

- RQ1: What are the know-hows that some PathwayConnect students report having used to stay connected when access to coursework is a barrier?
- RQ2: What does the PathwayConnect Program Council determine to be effective curriculum and design of the Staying Connected Lessons as an innovative approach to transferring know-how practices to other students?

RQ3 and RQ4 were dedicated to the impact of the innovation on students:

- RQ3: How and to what extent does participating in the Staying Connected lessons change students' use of strategies that help them persist?
- RQ4: To what extent does supporting students to adopt know-how strategies impact student persistence in PC 101?

## CHAPTER 2

### THEORETICAL PERSPECTIVES AND GUIDING RESEARCH

In chapter 1, I reviewed the international context of higher education and the online delivery of coursework including access inequities. I also reviewed the emergence of BYU-PW, an organization dedicated to delivering online higher education coursework to bridge access inequities and retain as many students as possible. I shared the results of two prior cycles that were designed to boost retention. A proposed third cycle is the focus of this dissertation proposal, designing and deploying creative means for students to access their online coursework when they have less-than-desirable Internet access. In this review of literature, I will discuss self-regulated learning as a useful theory for studying how online students stay on task and complete their work. I will then describe Warschauer's conceptual framework of resources that shape digital inclusion. As students are included in their online courses through these resources, their attendance and performance are positively impacted, leading to student learning. I will then outline a leadership model that I will use to support the innovation of this dissertation study. Finally, I will review the action research model this study will employ, noting its strengths, drawbacks, and counters to innate research threats.

#### **Keeping Students Connected: An Ethical Responsibility**

Advances in technology only benefit society when they are coupled with additional innovation that supports the technological advance. This concept was illustrated in 1986 when Melvin Kranzberg gave a speech in the Henry Ford Museum to the Society for the History of Technology. In the speech, Kranzberg revealed six laws

that he said govern all interactions between humans and technology. Kranzberg's second law stated that "invention is the mother of necessity" (Kranzberg, 1986, p. 548). He illustrated this law by reviewing inventions that spawned other needed innovations such as how Bell's telephone created a need for Edison's carbon-granule microphone and, eventually, the need for automated line switching machines. Kranzberg noticed that as technology leapt forward, additional innovation was needed to support its full implementation. Kranzberg called this idea a technological imbalance, "a situation in which an improvement in one machine upsets the previous balance and necessitates an effort to right the balance by means of a new innovation" (1986, p. 549).

Though distance education is designed to be delivered to any corner on Earth, getting it to those corners depends on affordable high-speed internet (Alliance for Affordable Internet, 2021). Iconoclastic scientist and physicist Freeman Dyson said, "Ethics must guide technology in the direction of social justice. Let us help to push the world in that direction as hard as we can" (1999, p. 74). Since it will take a very long time for governments across the world to attain a stable Internet infrastructure, educators should do what they can to create resources that empower students to stay connected, even when internet connectivity is unpredictable or intermittently available (Tate & Warschauer, 2022).

Those who design online learning must create systems that afford maximum inclusion. Inclusive online learning "refers to the opportunities afforded by online technologies that make higher education accessible, relevant, meaningful, and engaging to all students" (Yang, et al., 2022, p. 494). Recognizing this, the United Nations noted



that COVID-19 has expanded inequities in education as poorer students worldwide are less likely to be able to access their online coursework when they move to distant learning (United Nations, 2022). In places like Ukraine, two thirds of children have been forced from their homes and 3 million of them are taking coursework online. Realizing the possibilities of online learning, the United Nations noted:

Providing safe, inclusive and continuous education to those girls and boys is crucial in helping them cope with current and future crises. It is one of the soundest and most important investments that can be made in human and socioeconomic development (United Nations, 2022, p. 35).

While many point out the ethical obligation to support students in their online coursework (Rotar, 2022; Simpson, 2008; Tate & Warschauer, 2022; United Nations, 2022), not many studies on this topic have been conducted in developing countries (Yang et al., 2022). For distance education programs to maximize their reach, they must find out how they can include those students in even the most challenging circumstances (United Nations, 2022).

### **Self-Regulated Learning Theory**

Self-regulated learning (SRL) is an “active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment” (Pintrich, 2000, p. 453). Elisha T. Joseph’s story from Chapter 1 illustrates the use of SRL as he carried out his education on his own despite challenging conditions. SRL is an appropriate theory to use when investigating

online learning because, absent a classroom with all its structures and rules, a live instructor in the room for motivation and direction, and live peers sitting nearby to provide collegial support, online learners must still engage in and complete educational tasks within the constraints of a course (Broadbent & Poon, 2015).

SRL emerged from Bandura's social cognitive theory (Bandura, 1986) as a framework that encompasses multiple self-regulation strategies in education contexts. Bandura's view on learning helps educators understand how people can be agents in their own development through the interplay of personal, behavioral, and environmental factors (Bandura, 1986, 2001). Personal determinants include self-efficacy and cognition; behavioral determinants include actions; and environmental determinants include expectations and norms, the people that surround us, and the places where we live, learn, and do work. These three determinants interact with each other in what Bandura called "triadic reciprocity" (1986, p. 18), where a person's behaviors are a response to the influence of the combined factors. This interaction is what leads to a learner's understanding of the world and the way they engage with it.

Zimmerman built SRL on social cognitive theory when he posited that the personal agency or responsibility inherent in Bandura's triadic reciprocity is a critical element in learning. Moreover, he suggested that learning is not something that is enacted upon students but a process enabled by the students themselves based on a series of self-regulation strategies (1986), which he called subprocesses. He placed these subprocesses into three areas: (a) metacognition, (b) motivation, and (c) behavior:

Metacognitively, self-regulated learners are persons who plan, organize, self-instruct, self-monitor, and self-evaluate at various stages during the learning process. Motivationally, self-regulated learners perceive themselves as competent, self-efficacious, and autonomous. Behaviorally, self-regulated learners select, structure, and create environments that optimize learning. (Zimmerman, 1986, p. 308)

According to Zimmerman, students who are more effective learners utilize these subprocesses, and are aware when they use them, thus reinforcing a sense of self-control and self-efficacy (1986).

In 2000, Pintrich added a fourth area of self-regulation, context, to account for students enacting self-regulated learning strategies in response to changes in their surroundings or the constraints of their assignments and learning activities. Pintrich's resulting framework listed four areas of SRL that should be considered by educators: cognition, motivation/affect, behavior, and context. Within each of these areas, students make plans, monitor and control their progress, and reflect when they are done with learning tasks. Pintrich stressed that the four considerations are not linear processes but a heuristic to be used in constructing research using SRL.

The literature contains many studies and discussions of SRL strategies, and each can be categorized within one or all of these four areas. In an initial validation study of SRL, Zimmerman and Martinez Pons (1986) conducted free-response interviews with 40 high-achieving high school sophomores, and 40 low-achieving sophomores to gauge their

use of fourteen SRL strategies and then compared the results with achievement on a standardized test. The 14 strategies were:

1. Self-evaluation
2. Organizing and transforming
3. Goal setting and planning
4. Seeking information
5. Keeping records and monitoring
6. Environmental structuring
7. Self-consequences
8. Rehearsing and memorizing
9. Seeking social assistance from peers
10. Seeking social assistance from teachers
11. Seeking social assistance from adults
12. Reviewing records - tests
13. Reviewing records - notes
14. Reviewing records - textbooks

The higher achieving students consistently used organizing and transforming, seeking information, keeping records and monitoring, and reviewing notes. Analysis of test scores showed that use of SRL was a good predictor of the success of the higher-achieving group. In this study, self-evaluation was not much of an indicator of success and did not correlate significantly with achievement test results. Zimmerman and Martinez Pons (1988) followed two years later with a similar mixed methods study of 44

male and 36 female high school students and their teachers to look for the interplay between the same 14 SRL strategies. This follow-up study found that when teachers saw SRL in students, students reported it in themselves as well. Additionally, the potentially confounding variables of student achievement scores and verbal expressiveness did not introduce significant noise into the data.

Zimmerman noted that SRL research had been conducted primarily in structured classroom settings and that research is needed on the use of SRL in “naturalistic contexts” (1986, p. 625). Additionally, in 2000, Pintrich pointed out the need for researchers to study contextual influences of SRL noting, “there has not been as much research on how self-regulation develops in natural contexts, especially in different types of classrooms” (p. 493). Over the last two decades, researchers have studied online students in remote contexts, and have found the online environment to be a place where SRL could be measured (Broadbent & Poon, 2015; Yang & Kortecamp, 2021). Many recent studies suggest that SRL is correlated with academic achievement (for example, Azevedo, 2005; Broadbent & Poon, 2015; Cho & Shen, 2013; Guo, 2022; Roll & Winne, 2015; Taub, et al., 2014; Wang, 2013). Further, research has shown that students with high self-regulation persisted in online coursework (Kizilcec, et al., 2017; Lee, et al., 2013; Lee, et al., 2017).

The following sections discuss the literature in more detail relative to the four areas of SRL outlined by Pintrich (2000): cognition, motivation/affect, behavior, and context.

## *Cognition*

Before engaging in a learning task, self-regulated learners activate their prior knowledge, make plans to tackle the learning task, and monitor and reflect on their performance (Pintrich, 2000). Activating prior knowledge can be taught to online students (Azevedo, 2005), and when students access what they know, it is linked to higher SRL use (Taub et al., 2014). Self-regulated learners approach learning tasks with an agentic perspective, taking responsibility for setting learning goals (Kizilcec, et al., 2017; Pintrich, 2000; Schunk, 1990; Winne, 1997). Kizilcec et al. (2017) looked at 4,831 students in six different massive open online courses (MOOCs) to determine the role of SRL strategies in course goal attainment and in student interaction with the course. Goal setting and strategic planning were high predictors of course completion, assessment completion, and lecture-watching completion. Schunk (1990) indicated that three SRL subprocesses contribute to goal setting: self-observation, self-judgment, and self-reaction. All three of these are autonomous processes that, while influenced by peers and instructors, still require the learner to act independently. Lee et al. (2013) attributed this autonomy to possessing an internal locus of control. In their SRL-based study of 344 adult distance learners in Korea, they found that those who possessed an external locus of control, or those who saw the defining and achieving of their goals as dependent on external factors, were more likely to drop out. When learners make cognitive judgments about their learning, they make attributions, ascribing a reason for their success or failure at the learning task (Pintrich, 2000).

### *Motivation/Affect*

A learner's motivation and affective stance play a large role in keeping them engaged in the learning task (Pintrich, 2000). Self-regulated learners are motivated because they have self-efficacy, or they believe they can accomplish learning tasks (Zimmerman, 1986). Wang, et al., (2013) found that motivation among online learners came once they activated their prior knowledge, and that this motivation led to higher technology self-efficacy and course satisfaction, both of which were positively associated with high academic achievement. Lee et al. (2019), described the acquisition of self-efficacy among remote distance learners as a process of "becoming" (p. 26) as these learners came to see themselves as able to complete their online coursework when the challenges of life competed for their time and energy. The study involved ten online adult learners in Korea who were at risk for dropping out because they were older and worked full time. Half of the participants had children at home. The study found that the learners employed know-hows, a term to describe SRL strategies that were particular to the learning experience. In some cases, know-hows came from knowledgeable others who were veterans of the online program. In other cases, they were know-hows that the students learned along the way. Over time, those who persisted in their online programs demonstrated a tenacity to work through barriers and developed a belief that they would succeed. In a similar study, Bambara et al. (2009) looked at how online community college students at risk of dropping out persisted by tackling issues of "isolation, academic challenge, [and] ownership" (p. 219). Despite the equal importance Pintrich

ascribed to motivation as a component of SRL, he lamented that not much literature existed that explored it (2000).

### ***Behavior***

Self-regulated learners “select, structure, and create environments that optimize learning” (Zimmerman, 1986, p. 308). Good time management is a commonly studied SRL strategy in the area of behavior, and researchers have linked it to academic achievement (Broadbent & Poon, 2015; Lee et al., 2019; Nawrot & Doucet, 2014; Kizilcec et al., 2017; Pintrich, 2000). When students enroll in online asynchronous courses, their time management efforts are fueled by their motivation (prior SRL area above), and the more time they devote to engaging with their coursework, the more likely they are to succeed with it (Cho and Shen, 2013; Lee et al., 2019; Taub et al., 2014) and not drop out (Nawrot & Doucet, 2014). In a study by Lee et al. (2019), one study participant indicated that when he approached deadlines, carving out time was essential. SRL strategies in the area of behavior also include monitoring what is working and what is not, shifting away from what is not working, and seeking help when necessary (Pintrich, 2000). Although help seeking has been found to negatively correlate to academic achievement in MOOCs (Kizilcec et al., 2017), the literature points out that making help resources available and easy to use is critical to helping struggling online students find success (Azevedo, 2005; Hadwin & Oshige, 2011).

### ***Context***

Pintrich acknowledged that in some SRL models, context was not included because it could be viewed by students as out of their control. However, he insisted that



students could control their learning contexts. “It is the self or person who is acting on the context and attempting to change it as well as adapt to it that makes attempts to regulate the context a part of self-regulated learning” (p. 456). Pintrich further clarified that in the context area, students first think about their ability to complete learning tasks as being relative to contextual factors such as classroom norms, climate, the potential influence of their peers, and the personality and expectations of the instructor. Pintrich acknowledged that these perceptions were cognitions, but he placed them in the SRL area of context instead of cognition because they were directed towards the learning context. As students engage in learning tasks, they monitor the conditions of their learning context such as the rules, instructions, grading criteria, and changing conditions around tasks. Pintrich noted that “in comparison to control and regulation of cognition, motivation, and behavior, control of the tasks or context may be more difficult because they are not always under direct control of the individual learner” (2000, p. 471).

Online higher education students with less background in higher education and in online learning (e.g., first-generation students), struggle to employ SRL in the online context (Williams & Hellman, 2004). However, prompts inside the learning materials that students consume have been shown to boost student SRL (Yang & Cortecamp, 2021) as well as improve student learning (Guo, 2022). While the SRL literature between 2000 and 2020 has not taken up Pintrich’s (2000) context area of SRL as a distinct area of research (Yang & Kortecamp, 2021), research outside of SRL has found that supporting online students as they try to connect to and engage with what to them can be a novel learning context, is critical in keeping them from either dropping out or losing their

academic progress (Abdous, 2019; Alqurashi, 2016; Asadullah & Bhattacharjee, 2022, Bambara, et al., 2009; Xu & Xu, 2019).

### ***Co-Regulation***

Co-regulation involves learners working with a knowledgeable other to gradually acquire SRL skills (Allal, 2016; Hadwin & Oshige, 2011; Hayes et al., 2015). Co-regulation emerged as a branch of SRL due to SRL scholars recognizing that social interaction with peers and instructors was a major part of a student's learning experience – that this learning did not occur in a vacuum (Hadwin & Oshige, 2011). From the beginning of SRL scholarship, Zimmerman (1986) held that a student's ability to self-regulate didn't just magically coalesce, but rather, SRL was a “culturally transmitted method for optimizing and controlling learning events” (p. 311). Further, in a position piece, Winne (1997) maintained that though children lacked many good peer exemplars of SRL in their lives, schools could still teach and nurture SRL.

Allal (2016) defined co-regulation as the “joint influence on student learning of the learner's processes of self-regulation and of the sources of regulation in the learning environment” (p. 263). This included learning activities, teacher and peer interaction, and course materials. Allal maintained student SRL they acquired through these means was reinforced when students do well on assessments in their coursework.

Though this new branch of SRL has been studied in the context of online coursework, the focus has been on a social synchronous or asynchronous mediation of SRL through dynamic feedback from the instructor and peers (Peters et al., 2022; Sadaf et al., 2022; Vaughan et al., 2020). Sadaf et al. (2022), looked at how online graduate

students perceived social presence in a course rich in case-study group work and two-week long discussion boards. The more social presence they perceived, the more students tended to have higher metacognition, a key element in SRL and co-regulation as learners plan learning activities, and then monitor and control their thoughts about them through the learning process. In a study by Peters et al. (2022), online graduate students from Europe and the United States had both positive and negative experiences with co-regulation activities such as peer collaboration. Positive experiences depended on the peers' willingness to engage in meaningful ways. When things went well, students achieved academic and non-academic outcomes, like figuring out how to use online tools and resources to accomplish their learning goals. The scholars noted there are opportunities for researchers to explore the role of self-regulation and co-regulation in both academic and non-academic outcomes.

### **Resources that Shape Digital Inclusion**

This dissertation study investigated the impact of a student-to-student communique, called the Staying Connected Lessons, that provided resources to students in the form of practical know-hows. These know-hows can be described using Warschauer's conceptual framework of resources that shape digital inclusion, or that help students connect to their online coursework and find success with it.

Early work by Warschauer (2003) recounted stories from three organizations that tried to use technology to enact positive social change. In each case, the organizations provided computer hardware and software to a target population but failed to provide adequate support or training, which derailed their efforts.

In the first case, researchers partnered with the government of New Delhi, India to construct a free, internet connected, 24-hour multi-computer kiosk in a New Delhi slum. The goal of the experience was to provide an unstructured, stimulating learning environment for the local children that was outside the strictures of a classroom. Children were provided no instruction with how to use the kiosk. In this social experiment, children were intrigued by the kiosk and taught themselves to manipulate the computers to do basic things like moving the cursor, copy and paste, and use programs like Microsoft Word or Paint. However, the internet didn't work much of the time, so children spent most of their time drawing or playing computer games. Parents lamented that the kiosk distracted their children from their studies at school. In the second case, a telecom company conducted a marketing campaign that quickly put an internet-ready computer in every household in a small Irish town. But because the company didn't adequately train the townspeople, the technology didn't produce a more computer-savvy populace, and some poorer citizens sold their computers on the black market. In the third case, a computer lab was donated to an education department at an Egyptian university. The university was ill-equipped to install and maintain the lab and ended up storing the computers in their boxes for over a year before they were set up.

Each of these cases illustrates that organizations wanting social change through technology must support the people's use of the technology. Otherwise, people may come in proximity to the technology, but never fully benefit from it. Solutions that rely on technology must address the surrounding systems and provide necessary training to reach their full impact.

In distance education, addressing this principle means educators should help students access their online coursework in ways that lead to student learning through their attendance and performance in course activities. Access to online coursework is critical for students enrolled in distance education programs, but giving access is more than developing and providing online learning experiences.

To help educators think through the factors involved, Warschauer developed a “conceptual framework of resources that shape digital inclusion” (Tate & Warschauer, 2022, p. 192). The framework suggests that educators can call on three types of resources to support their students: (a) physical resources, the means to access online curriculum; (b) human resources, the knowledge of how to use the online curriculum; and (c) social resources, support to use the online curriculum. Figure 5 shows a representation of the Tate and Warschauer (2022) framework. The overlapping circles represent the constant interplay between the three resources that shape student learning through their online coursework. Student attendance, performance, and learning are in the center of the Venn diagram because in this space, a student has been afforded enough of all three resources to be equitably included in the online learning opportunity.

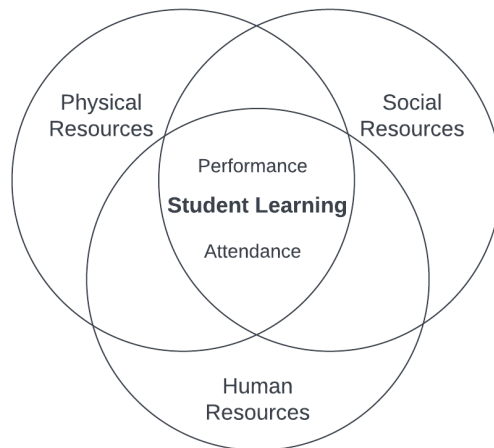
Warschauer formulated this framework in response to the COVID-19 pandemic when school systems were forced to use online tools to deliver learning opportunities in response to mandatory school campus shutdowns. The result of this serendipitous mass social experiment was access inequities among poor and ethnic minority students who lacked essential elements to help them connect with the online coursework, including

information about how to navigate outside demands. Tate and Warschauer noted how his framework led educators to review the entire learning experience:

“[The Conceptual Framework of Resources that Shape Digital Inclusion] moves beyond a binary focus on access to physical resources and considers the ways in which differing levels and gradations of access contribute to social and economic stratification or inclusion. Differing access to online learning, particularly when it becomes the primary mode of education, contributes to stratification or inclusion that is in part reflected in student attendance and achievement outcomes. This social inclusion lens changes the focus from providing equipment and instead to ensuring the individual and social resources needed for meaningful educational opportunities” (p. 197).

**Figure 5**

*Representation of Warschauer’s Conceptual Framework of Resources that Shape Digital Inclusion*



## ***Physical Resources***

To be full participants in distance learning, online students need physical resources in which they can engage their online coursework. This includes a space to concentrate and study, necessary hardware to access the online coursework, and a regular high speed internet connection (Tate & Warschauer, 2022).

**Space.** Tate and Warschauer (2020) explained that while distance education eliminates traveling to a classroom, it does mean that a student must create a learning space in their locale. Aguilar and Galperon found that during COVID-19, only one in three families in the Los Angeles Unified School District had a quiet place for their children to study at home (2020). Globally, with a lack of adequate housing for over one billion people (United Nations, 2022), students accessing online coursework in sub-par conditions will not have private, quiet spaces to study. According to the Behr et al. (2021), to be considered adequate, a house should have: “(a) access to improved water, (2) access to improved sanitation; (3) adequate living space, (4) durable material and good structural quality, (5) security of tenure, (6) access to electricity, (7) access to clean cooking” (p. 5). When looking at 64 emerging economies across the world, Behr et al., discovered a deficit in housing adequacy in 1.26 billion people (2021). Such inadequacies will make it difficult for students to create study spaces where they can access online coursework.

**Hardware.** Hardware includes computers and other devices that access the internet. While most online coursework is geared for consumption via a computer, some students only have access to weaker devices like Chromebooks, tablets, or smartphones

(Aguilar, 2020). The COVID-19 pandemic gave educators and scholars an opportunity to review the importance of computers when accessing online learning. In the United States, the National Academy of Education (2020) concluded that ensuring student access to resources like computers and high-speed internet was a basic necessity and as important as providing food to students who were receiving it at schools before the campus shutdowns (2020). Aguilar et al. (2020), reported that during the pandemic, about one in three low-income families in the U.S. bought a new device or internet connection so their children could engage in online coursework. Minority students in the U.S. struggled to obtain these resources. During school shutdowns, black teens in the United States were almost twice as likely to report trouble completing online coursework due to insufficient computer or internet access compared to white students (Auxier & Anderson, 2020). Most higher education institutions provide minimum requirements for students who want to participate in online degrees (ASU Online, 2022; University of South Africa, 2023). For example, at ASU, physical resources for student success include high-speed internet up to 25 Mbps and a computer or laptop as opposed to weaker devices like cell phones and Google Chromebooks (ASU Online). After searching through the admissions requirements of major universities offering online degrees in Africa including the University of Ghana (2016), the University of Lagos (2021), the University of South Africa or UNISA (2023), and the University of Zambia (2019), only UNISA listed such requirements.

**Internet.** A high-speed internet connection is essential for accessing online coursework. Even when controlling for parent education, income, and food insecurity, a



study of 10,000 elementary school parents in the United States found that children with access to a high-speed internet connection completed more assignments online than those without a high-speed internet connection (Domina et al., 2021). Oyo and Kalema (2014) lamented that lack of technology infrastructure in Africa kept much of its population from accessing massive open online courses (MOOCs) in Africa. The study noted that MOOCs “could eliminate Africa’s nightmare of large school dropouts after secondary school education,” (p. 3), yet the continent was not ready for MOOCs due to the lack of available high-speed internet, limited computer access, and frequent blackouts. In Sri Lanka, university students forced to learn from home during COVID-19 reported that having a low-quality or sporadic internet connection prevented them from engaging fully in their online coursework including watching lectures and completing assessments (Yang et al., 2022).

### ***Human Resources***

Human resources include the skills necessary to access and successfully complete online coursework. This includes a foundation of literacy, strategies to succeed as an online student, and self-regulated learning skills (Tate and Warschauer, 2022).

**Literacy and Education on How to Succeed as an Online Student.** A students’ ability to succeed in an online course depends on their ability to read and write (Tate and Warschauer, 2022). Gaps in literacy among different demographics persist (NAEP, n.d.) and will make learning online difficult for those students not yet ready to engage in an environment where instructions and content are mostly written. This is also true for English Language Learners who have the added burden of understanding and completing

online coursework in a second language (National Academy of Education, 2020). Means et al. (2014) reported that in community colleges offering both campus and online coursework, those who took the online courses were more likely to be fluent in English.

In addition to having basic literacy skills, students need to know how to understand and complete work in online courses (Tate & Warschauer, 2022, Yang et al., 2022). In a review of literature by Means et al. (2014) about underperforming online learners in an online community college, students had “weak academic preparation, competing workplace and family priorities, lack of technology skills and needed technology infrastructure, [and] underdeveloped skills for learning independently” (p. 148). Implications from this study suggest instructors should find ways to develop learners’ abilities to succeed in online coursework such as providing an online orientation to the course. Tate and Warschauer indicate that these online orientations can include the following:

a combination of relatively simple strategies [that] build support for students such as providing synchronous orientation at the beginning of the online course, creating a custom welcome and orientation video on the front page of the course, instructors sending positive emails to students regularly, weekly reminders of what is coming next, [and] ensuring the course includes images and examples of a variety of demographic groups... (2022, p. 200).

At the university setting, universities should not assume students can use a computer well enough to succeed in their online programs (Spencer & Temple, 2021). In Ghana during the COVID-19 pandemic, Nketsia et al. (2021) measured pre-service

teachers' abilities to succeed in their classes when their universities had to switch to online coursework. Students who took computer training courses in advance of their current online teacher education coursework did better than those who did not. Noting how experience with technology can lead to improved technological skills, in a study by Abdous (2019), the academic self-efficacy of the 3,888 online university students was enhanced when their institution provided them with an online learning orientation. The online orientation helped students prepare to take courses online by improving their technical skills. Students who were highly satisfied with the online learning orientation were much more likely to have confidence in using the learning management system to access courses content. This dissertation study was an investigation of the impact of a student-to-student communicate called the Staying Connected Lessons, in which know-hows from knowledgeable others were shared with students who may have benefitted from their wisdom about how to stay connected to the online coursework when technology become a barrier. In Warschauer's framework, these lessons trained the student, or the human resource. It was a form of technology training.

**Self-Regulated Learning.** In Warschauer's framework, SRL encompasses a series of strategies used by students to take full responsibility for all aspects of their learning. Specific to an online course, students must take responsibility to understand course expectations and complete the work with little engagement with their instructor (Bambara, et al., 2009; Kizilcec et al., 2017). A review of empirical studies from 2004 to 2014 showed that the use of the SRL strategies of time management, metacognition,

effort regulation, and critical thinking by students was positively correlated with student achievement in online courses (Broadbent & Poon, 2015).

While SRL strategies can empower students in online courses to find success, Tate and Warschauer (2022) noted that more innovation and research is needed to discover which strategies work broadly for students living around the world:

The research community could provide guidance by expanding research on specific self-regulated learning interventions that improve equitable outcomes and are scalable and replicable since many of the current promising studies have required intense time commitments to customize the intervention for particular contexts (Tate & Warschauer, 2022, p. 200).

### ***Social Resources***

Social resources include the people who can provide training, help, and support for student's use of learning technology. In education settings, this includes parents, teachers, and peers (Tate and Warschauer, 2022; Yang et al., 2022). In terms of this dissertation study, the knowledgeable others providing their know-hows can be characterized in Warschauer's framework as a social resource.

**Parents.** Parents are an important resource for children and young people when they struggle to stay connected to their online coursework (Madimabe & Omodan, 2021; Nasser et al., 2011; Tate & Warschauer, 2022). However, not all parents are equipped to do this well. In the United States, 30% of parents during the COVID-19 pandemic reported that they had a very or somewhat difficult time helping their children understand and complete their online coursework (McClain et al., 2021). In a Los Angeles Unified

School District survey of parents during the COVID-19 pandemic, half of the respondents had not completed high school and most of them lacked experience with computers, which made it difficult for them to troubleshoot internet connection issues at home (Aguilar, et al., 2020). In a different study, a survey of 10,000 parents of elementary school students in the United States' southeast showed that student engagement with remote learning was more likely if their parents had a college degree and if they were socially connected with other parents nearby (Domina et al., 2021). And in India, a survey of 700 students revealed that 41% relied on their parents to keep them connected to their online coursework (Gupta et al., 2022). Similarly, in a survey of fifty rural college students enrolled in an online technical and vocational education and training program, 89% of the respondents said that, even as adults, they were still dependent on their parents for help understanding and succeeding in their online coursework (Madimabe & Omodan, 2021). Of 1,376 young students in Qatar, most reported that their parents could not help their students because they were not familiar with the online platform. And Nasser et al. (2011) noted a strong correlation between student LMS use and parent LMS use, and that when parents familiarized themselves with the online course, they were more likely to be able to support their children's use of online technology (Nasser et al., 2011).

**Teachers.** Teachers play an important role in helping their online students know how to engage in the course and encouraging them to not give up (Tate & Warschauer, 2022). Teacher presence in an educational setting encompasses all the actions by a teacher to help students learn in an online context (Garrison, 2016). According to

Picciano (2002) “presence” (p. 22) in an online course is the extent to which students feel that they belong in a course and that a teacher or peer is there to engage with them in learning the material even when that other person is not physically present.

While teacher presence is helpful, its quality matters even more. In the United States, Jaggars and Xu (2016) found a positive and significant relationship between the quality of teacher-to-student interaction and the student’s grades when looking at a group of over 600 online community college students. In an online Australian mathematics teacher preparation program, a qualitative analysis of teacher presence in online discussion boards with fifty-five students demonstrated that as instructors actively facilitated student dialogue and challenged them to extend their thinking, the discussion boards showed more student-to-student and student-to-teacher participation (Muir, 2022). Gold et al. (2021) found that even in a learning activity where students were asked to work together to negotiate meaning, the quality of that interaction was heavily influenced by the quality of the teaching presence to prompt and instruct peer-to-peer engagement.

The availability of teachers to provide this kind of support is critical for their presence to positively impact student engagement in online coursework (Gupta, 2022; Jaggars & Xu, 2016; Yang, 2022). However, in an online asynchronous course where students are spread out over the world, teachers may not be able to respond to all questions immediately. Universities have responded to this by creating help centers that are available during early or late hours and even around the clock (De La Rosa, 2017; D’Orio, 2019). Russell Poulin, who runs research and analysis at Western Cooperative for Educational Telecommunications, a policy institute dedicated to quality in online

education, noted, “It’s hard to jump into 24/7 tech support when you have [only] 58 online enrollments; I understand that there is a ramp up...But if you’re going to get serious about online courses, you need to expand your support offerings” (De La Rosa, 2017).

**Peers.** Low-income first-generation college students can have low college capital, or the sense of not belonging at college, a low reservoir of energy and little know-how to succeed in their coursework. Such students respond to positive institutional, faculty, and parent/family support (Bryant, 2021). Some universities offer peer mentors to help students feel like they belong and to help them improve their understanding of the university environment. In online courses, a peer mentor is especially important as students are physically isolated from campuses and classrooms (Broadbent & Poon, 2015; Pollard & Kumar, 2021). A peer mentor is another student who is committed to providing support to another student (Baranik et al., 2017). Pollard and Kumar (2021) examined literature on peer mentoring in online graduate programs and found they positively impacted students’ perceptions of their programs, their professional development, and their ability to communicate using diverse means. Written records of peer mentor interactions provided valuable reference information for students for future use. In a 2017 study by Baranik et al., online students’ satisfaction with their peer mentor was related to the degree they felt they held rapport with their peer mentor, a construct called relatedness. In this study, relatedness predicted classroom learning, which predicted the final grade (Baranik et al., 2017).

A variation of the peer mentor is the near peer. “A near peer teaching model is when a more experienced student acts as the instructor and passes on their knowledge to the students” (Cambridge University Press and Assessment, 2023, “near-peer” definition section). This model has shown positive effects on student learning in face-to-face modalities (Davies et al., 2016; Yap, 2022; Zaniewski, 2016) as well as through online means (Al-Thani et al., 2023; Schuman et al., 2021; Singh et al., 2014). These studies documented the use of near-peers in synchronous and asynchronous formats where the mentors and mentees experienced two-way communication.

In this dissertation study, the knowledgeable others sharing their know-hows could be called peers because they had first-hand experience of the challenges PathwayConnect students faced as they strived to stay connected to their online coursework even when technology barriers arose. Because Warschauer’s framework holds that peers are a social resource that leads to better student learning in their online coursework, it was important to frame the Staying Connected Lessons so that study participants who used it would sense that it was coming from peers.

### **The Hill Model of Team Leadership**

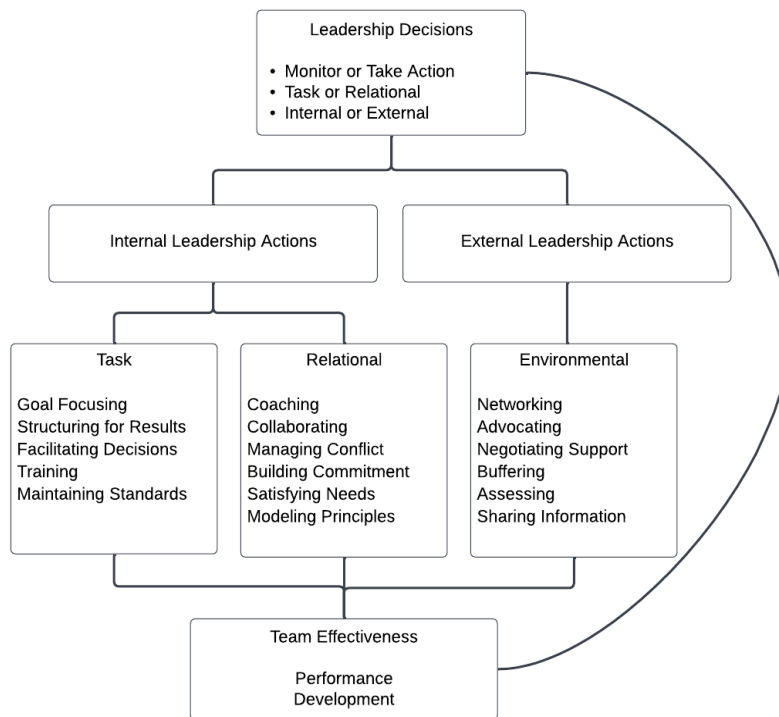
Hill (2016) developed the Team Leadership Model to encapsulate the steps that team leaders must take to monitor team performance, then take action for maximum team effectiveness. Hill was inspired by studies about educational organizations that engaged stakeholders from different workplace settings to come together as a team and accomplish work that benefits the larger organization (Hackman, 2012; Northouse & Lee, 2019; Parker, 2011). Though team members collaborate laterally, the balance of power



within a team can shift from one person to another depending on the task at hand and the expertise of certain team members (Aime et al., 2014). In the Hill model, team leaders are usually peers who need to understand the team’s fluidity, the changing demands on the team’s time and scope of their work, and the interpersonal development and effectiveness of team members (Hill, 2016). The steps in this model include leadership decisions, leadership actions, and team effectiveness. Team leaders move through these steps sequentially. See Figure 6.

**Figure 6**

*The Hill Model of Team Leadership*



*Note.* From “Team Leadership” by S. E. K. Hill in *Leadership: Theory and practice* by P. G. Northouse (Ed.), 2016, p. 367. Copyright 2016 Sage. Reprinted with permission.

### ***Leadership Decisions***

The first step in the cycle calls for team leaders to review the interpersonal dynamics of their team and make what Hill (2016) calls a “mental model” (p. 366), a picture of the team’s productivity, the problems it must tackle, and ways it might go about doing that. Team leaders must continually reassess their mental model and be ready to take actions that help the team internally or externally. Internal leadership actions address the team’s productivity and its cohesiveness. External leadership actions address the environmental conditions that surround and support the team. The decision to act is a result of the team leader’s careful evaluation of the team’s performance, its social dynamics, and its situation within the organization.

### ***Leadership Actions***

After the team leader has a mental model of the situation and has made appropriate decisions, the team leader takes internal and external actions (Hill, 2016). Internal actions involve focusing the team on the task at hand through goal setting, outlining project timelines and parameters, training team members where needed, or helping the team come to a consensus. Internal actions also involve tending to the interpersonal needs of the team through conflict management, coaching, and modeling effective collaboration. External actions may involve bringing in outside expertise when needed, advocating for the team’s position within the greater organization, or protecting the team from potential outside threats. Using Hackman’s (2012) six conditions that help teams work well together, Hill (2016) discusses internal and external actions team leaders can take for greater team effectiveness.

**Real Team.** The team members work interdependently as a social unit. The team leader binds them together by a common purpose and commitment. Team leaders need to make sure their teams know the boundaries of operation, are safe taking risks, and are willing to lend their strengths to the group's efforts. Where one or more team members is not aligned, the team leader works to reestablish a unity of purpose by stressing the common goal, celebrating the value each team member brings to the table, and finding ways to help the team play off each other's strengths (Hill, 2016).

**Compelling Purpose.** The team leader sets a goal for the team that inspires them to give their best efforts. "A compelling purpose energizes team members, orients them toward their collective objective, and fully engages their talents" (Hackman, 2012, p. 437). In addition to setting and clarifying goals, team leaders create an outcomes-driven work structure where it is clear what the roles of each team member will do towards accomplishing the goal (Hill, 2016).

**Right People.** The team must be composed of the right number and mix of people with necessary expertise and heterogeneity. Overly homogenous groups can stagnate cross-organizational value-add. Team leaders may not have control over who is placed in their team, but they can train team members and coach them as needed to acquire knowledge sufficient to increase their contribution (Hill, 2016)

**Clear Norms of Conduct.** Team leaders must establish and exemplify appropriate norms and boundaries, so group energy is spent in output as opposed to behavior correction. It is appropriate for the team leader to apply pressure on the team to give their best to the effort. When leaders make connections between their expectations

and results as they come in, they can point out areas of improvement, reward hard work, and spark the team members' drive for excellence (Hill, 2016).

**Supportive Organizational Context.** The team leader can nurture the team by giving it necessary external support like training, data streams, and technical assistance. The team leader should be resourceful and advocate for the team's operational needs, otherwise it will not be equipped to fulfill its mandate.

**Team-Focused Coaching.** Collaboration is the lifeblood of a team, and team leaders model it consistently. They demonstrate the kind of work ethic and focus needed to keep the team moving forward. "Leaders can reduce the effectiveness of their team by being unwilling to confront inadequate performance, diluting the team's ability to perform by having too many priorities, and overestimating the positive aspects of team performance" (Hill, 2016, p. 372). When team leaders bring the best out of their team and then visually connect those efforts with results, team members gain confidence in their ability to synergize.

### ***Team Effectiveness***

As a final stage in Hill's leadership model (2016), Hill suggests that a team leader watches for team effectiveness through performance and development measures. Performance is defined as, "the quality of the outcomes of the team's work (p. 368) and development is referred to as "the cohesiveness of the team and the ability of team members to satisfy their own needs while working effectively with other team members" (Hill, 2016, pp. 367-368).

Hill (2016) stresses that the cohesion of the team depends on its ability to stick to a goal despite any friction in personalities or conflicting personal agendas. Team leaders set the tone of the team's interactions by establishing clear roles; instilling a culture of collaboration and trust built on "honesty, openness, consistency, and respect" (Hill, 2016, p. 370); ensuring a safe environment where team members live up to the expectations to contribute; and demonstrating appreciation for contributions. When the team leader helps the team develop as a cohesive, well-functioning unit, team performance is enhanced and a climate that is results-driven through collaboration can be achieved. Team leaders use appropriate benchmarks to continually assess the team's performance and development, and, in so doing, move themselves to the beginning of the team leadership model where they can make decisions about the next actions (Hill, 2016).

### **Action Research**

This study was conducted using action research methodology. This methodology is often utilized in educational settings where practitioners are interested in crafting innovative solutions, facilitating the innovation, and using research to improve the innovation and study its impact (Ivankova, 2015; Mertler, 2014; Stringer, 1999). In an action research study, the practitioner is also the researcher. Consequently, there are two goals behind action research studies: to create educational change, and to use research as a part of the change operation. In this section, I will review action research literature on change in educational systems, the role of the researcher-practitioner, the use of literature and data, and affordances and mitigating the drawbacks of action research.

### *Change in Educational Systems*

In education, action research is used to engage in a cyclical inquiry into educational systems with the goal of enacting positive and immediate change (Ivankova, 2015; Stringer, 1999). While researchers have developed different variations of action research, all action research studies share an emphasis on change as a key outcome (Costello, 2003; Mertler, 2014). In an action research study, change emerges as a result of cycles of inquiry. For example, in Stringer's model of action research, participants engage in an "action research interacting spiral" (p. 19) consisting of three major phases: look, think, act. Each iteration of these phases pushes for systemic change as one cycle builds on another. Because cycles of action research are contextually bound, they allow educators to conduct rigorous research to enact the change needed in ways that work for them (Mertler, 2014; Stringer, 1999). Relevant to this study, action research can be used to address systemic issues in education such as equity, and being student centered (Herr & Anderson, 2005). Noffke (2009) warned that action researchers need to consider the political realm of a study because changes imposed by action research may only be effective by working "through and often against existing lines of power" (p. 3). In essence, action research can empower education to challenge systems around them as they seek for helpful changes (Herr and Anderson, 2005).

The results of an action research study are steeped in the educational context and are unique and useful to the needs of the participants (Stringer, 1999). Because an action research study is tailor-made work for a learning community, it is intended to empower stakeholders and improve the prospects that changes will be relevant and useful (Dick,

2014; Ivankova, 2015; Stringer, 1999). While the findings of studies about innovations that propel these changes are context-specific and may not be generalizable to a broader audience, any conditions in which these findings emerge that are common to other practitioners can strengthen their applicability to other settings.

### ***The Role of the Researcher-Practitioner***

The action researcher is a practitioner who functions within an existing educational system (Stringer, 1999) to do research about a change operation that they influence (Mertler, 2014). This means that the unique professional characteristics of the researcher, including their educational context, background, and preparation, shape how they view the educational setting, how they go about choosing a problem to focus on, what research questions they think will support a potential intervention, what data they will collect and how they will analyze it, and how to draw conclusions that will benefit the learning organization (Ivankova, 2015). The findings of an action research study are practical and relevant because action researchers are positioned to be “more interested in changing the world than in discussing its philosophical status” (Dick, 2014, p. 3).

Action research can support organizational development and trigger organizational change that is systemic. Because action researchers are motivated by a desire to understand and improve their work contexts (Mertler, 2014, Stringer, 1999), action research methodologists recommend involving all stakeholders as participants (Pant, 2014). As a stakeholder within the context of the problem of practice, they are responsible for keeping the process moving (Stringer, 1999) and for using data to support the endeavor (Mertler, 2014). Because an action researcher often leads, manages,

facilitates, or organizes the change operation while they administer the research plan, they are oftentimes labeled a researcher-practitioner.

From the practitioner angle, action researchers must ensure that participants know their roles and responsibilities, that all associated stakeholders are informed and buy into the proposed change, that decisions are made that are in alignment with the organizational mission and expectations. From the research angle, they are responsible for designing data-driven decision-making methods, for ensuring that all participants are informed of their rights and responsibilities per their organization's Institutional Review Board for the protection of human subjects, for collecting data and analyzing it, for drawing conclusions about the result of the change effort. Further, since action research is an iterative orientation to organizational change (Pant, 2014), they are responsible for determining what went well and what needs to be improved, expanded upon, or adjusted (Costello, 2003).

### ***Use of Literature***

Action researchers leverage relevant literature to shape their research questions, define an innovation, and choose an appropriate methodology (Mertler, 2014). This includes reviewing theoretical literature and empirical, peer-reviewed studies that apply theory. They look for how findings from relevant studies can be applied. Because they are well-versed in the literature and seek to steep their study in theory and research findings, they recognize where gaps in the literature exist and where their study design and proposed changes align with the research base (Stringer, 1999). Situating their work in the body of literature gives action researchers the self-assurance they need when



engaging with stakeholders about the change project (Mertler, 2014). From an ethical standpoint, “when prior theory is used, it is expected to be in the service of practice” (Dick, 2014, p. 4).

### *Use of Data*

Action researchers can use quantitative and qualitative data to determine answers to their research questions (Mertler, 2014). The benefit of having a mixed methods approach to an action research study is that findings can be: (a) exploratory, where qualitative data findings are clarified with subsequent quantitative data; (b) explanatory, where quantitative data findings are reinforced with qualitative data; (c) triangulated, where quantitative and qualitative data are collected and analyzed together to simultaneously trace mutual patterns (Dick, 2014; Mertler, 2014).

Formative review, a method of collecting and analyzing data at a midpoint in the change operation, supports action researchers to build an emerging picture of the research cycle and adjust the study design as the data warrants (Stringer, 1999). Because the action researcher is steeped in the data and is situated in the environment where the change is occurring, mid-stream adjustments that support the main goal of instilling sustainable change are appropriate and desirable. Springer notes the messy and complicated nature of action research:

As experience will show, action research is not a neat, orderly activity that allows participants to proceed step-by-step to the end of the process. People will find themselves working backward through the routines, repeating processes, revising

procedures, rethinking interpretations, leapfrogging steps or stages, and sometimes making radical changes in direction. (Stringer, 1999, p. 19)

The ability to make data-driven adjustments if needed must be coupled with summative evaluation of an action research study (Dick, 2014; Ivankova, 2015; Mertler, 2014). In Mertler's model for action research, reflecting occurs at the end of a cycle and involves disseminating results to stakeholders and others who might build on the work (Mertler, 2014). In Stringer's three-phase model (look, think, act), the act phase includes an evaluation of and reflection on the innovation (Stringer, 1999). Similarly, Ivankova's evaluation phase calls for "collecting, analyzing, and interpreting data about [the] action/intervention" (Ivankova, 2015, p. 45). These models of action research involve iteration in which the results of this summative evaluation can inspire new cycles of inquiry.

### ***Affordances Action Research***

Action research affords tremendous value to researchers because their work is performed in the very context in which they are seeking solutions to problems of practice. As a result, action research is "persuasive and authoritative" (Mertler, 2014, p. 19). In addition, action research studies are designed with greater-good consideration and with consideration for how the proposed change and research endeavor is for "the well-being of the people" (Stringer, 1999, p. 21). The coupling of change in practice with research about change empowers action researchers to work with participants to seek solutions that might be found outside of the way they are accustomed to managing their responsibilities (Pant, 2014).

### *Mitigating the Drawbacks of Action Research*

Researchers who design action research studies need to be aware of the potential drawbacks of this method and use appropriate research measures to counter them. For example, researchers must learn effective ways to write up findings and share the implications of a study with the practitioners who were involved in their research (Mertler, 2014). Further, as Mertler warns, an action research study is a small glimpse of a larger change operation that will involve future iterations (2014). Mertler also shares that an action research study "... is not conclusive; the results of action research are neither right nor wrong but rather tentative solutions that are based on observations and other data collection and that require monitoring and evaluation in order to identify strengths and limitations" (p. 21).

Sharing their findings with colleagues is a way for action researchers to add credibility to their work. When done well, disseminating findings to others allows the researcher practitioner to demonstrate the rigor of the study and inspire their peers to embark on future action research journeys (Mertler, 2014). Good dissemination involves giving adequate background information, sharing the purpose of the study, reviewing the methods used, describing the results and conclusions, and highlighting what next steps will be taken in future cycles (Mertler, 2014). It also leaves space for questions and answers from audience members, whose input can serve to strengthen ideation for those future cycles.

As in all research, the potential bias of the researcher must be addressed. Because the researcher in an action research study is also a practitioner who works in the context

of study, the tendency for bias in action research can be high as researchers look for results in the data that confirm previous assumptions they have due to their lived experiences (Pant, 2014). Even the theories and data analysis techniques action researchers use are not “neutral means; they embody our relations to power through the arenas they center” (Noffke, 2009, p. 2). All action research must acknowledge these potentials for bias as it seeks to enact positive change. Measures to counter this bias include involving peers who critically review research procedures and data collection instruments (Ivankova, 2014; Stringer, 1999), examining their own worldview to identify where it could be influencing their conclusions (Pant, 2014), providing multiple data points to triangulate findings (Mertler, 2014; Stringer, 1999), and keeping a research journal where emerging knowledge from data can be critically checked against the researcher’s expectations or perceptions of what is happening (Ivankova, 2014).

## CHAPTER 3

### METHOD

#### **Introduction**

In this chapter, I will describe the method I used for the study. First, I will review the elements of action research and explain how and why I used this approach. I will then review the setting and participants, data collection, and analysis. This chapter will also include the method used for developing the innovation, called the Staying Connected Lessons. This chapter will also include a description of the innovation and how the innovation was deployed. Because knowing the results of RQ1 (What are the know-hows?) and RQ2 (How do you teach the know-hows?) were necessary to develop the innovation, analysis and findings to those questions will be shared in the explanation of how the innovation was developed.

#### **Action Research Design**

I used the action research methodology in this study because it allowed me to carry out an innovative approach to the problem of practice in my place of work, use data to conduct periodic formative assessments so I could adjust the innovation in real time, and conduct a summative review of the impact of the innovation. Also, since action research is an iterative, context-rich process of inquiry, I was able to investigate a problem of practice and draw conclusions that served as the beginning point for a next cycle of inquiry and investigation. Results were viewed as “tentative solutions” (Mertler, 2014, p. 21) and this allowed me to formulate new questions to be studied in future cycles of inquiry.

Because my work-related responsibilities directly align with the concern of retention, I lead this project and I also researched the project. As a research-practitioner, I dually took responsibility for how the research supported the development of the innovation and how needed adjustments to the innovation were handled. In doing so, I considered the Hill model of team leadership (2016) as I fulfilled these responsibilities:

1. Facilitate an Innovation: I served as the administrator in charge of the project and coordinated communications, surveyed peer mentors, selected and interviewed SMEs, collaborated with the program designer on the communicate design, surveyed students, and analyzed their survey and retention data. Through all of this, I kept a research journal to reflect on these steps and the needs of my team as I led them.
2. Active Participants: I applied the Hill model (2016) for team efficiency to engage student participants to lend their voice in solving the problem of practice, the instruction manager to provide design input, and the program designer to support the design and deploy the Staying Connected Lessons.
3. Use of Formative Data: I collected, organized, and reviewed formative data at various points along the way and led my team in data-driven decision making to inform the design of the innovation. This allowed the innovative approach to evolve within this cycle of research. I used this formative data to answer RQ1 and RQ2.

4. Use of Summative Data: I collected summative data at the end of the study and led my team to evaluate and reflect on the impact of the innovation, answering RQ3 and RQ4.
5. Triangulated Data: To strengthen the credibility of our team's conclusions, I used both qualitative and quantitative data (Ivankova, 21015; Mertler, 2014), giving the researcher-practitioner confidence that the metrics of evaluation provided in-depth and appropriate data to make decisions about whether the innovation was effective and deserves the time and attention that would be needed for future iterations. While rigor in action research is the extent to which its findings are useful to its intended audience, it is also a means of checking for and eliminating bias (Mertler, 2014). To reduce bias further, I involved selected participants to review data collection instruments and suggest edits to strengthen their validity.
6. Reflection: Because I designed this study to review an experience, I led my team to use the findings as the starting point for a next iteration where, for example, we could improve the innovation or deploy it differently. Because of this need, I asked participants to share their experience and reflect about the natural next steps or a future study.

### **Setting**

The study took place at BYU-Pathway Worldwide and involved students who were enrolled in the first of three entry courses we facilitate, PC 101. PC 101 was presented in a learning management system. PC 101 is an online course that engages

students in various asynchronous learning activities. Students participate in a one-hour synchronous meeting each week with their cohort. Most of the cohorts meet via Zoom and a few meet in person.

### **Participants**

The PathwayConnect Program Council consists of myself as the chair and curriculum manager, the instruction manager, and the program designer. Together, we steer the PathwayConnect program, making sure the combined courses meet their primary objective, to prepare students for successful entry into an online degree. The program council members, together with the peer mentor manager and the peer mentors who became subject matter experts (SMEs) were the design team that created the Staying Connected Lessons under my direction. The PC 101 students who experienced the innovation were also participants in the study. To support the formative measures and decisions involved in this study, I consulted with a critical friend.

All participants were fully informed of the aspects of the research study and the expectations for participation. This included how their information was used and safeguarded as well as measures to assure that their participation did not harm them in any way. Per the Institutional Review Board at Arizona State University and at BYU-PW, I took responsibility for making sure all participants formally agreed to the conditions of the study and their involvement.

### ***Researcher-Practitioner***

I bring eighteen years' experience in education to this research study, with all those years dedicated to students in diverse learning circumstances ranging from junior



high students in poor neighborhoods, to multinational English Language Learners at college, to adult volunteers dispersed around the world, to first generation college students living in 188 countries. In my roles as an educator, adjunct faculty, corporate trainer, and curriculum manager, I have created curriculum for in-person and remote asynchronous students. The present research study allows me to leverage that expertise and improve my ability to reach students through online coursework.

For this study, I oversaw all aspects of the research process. Pertaining to the innovation, I facilitated a process to determine the SMEs, conduct five design meetings with selected participants to define curriculum, pedagogy, and placement of the Staying Connected Lessons. See Table 7 for a listing of design meeting participants and what data I gathered in each meeting. Pertaining to my role as a researcher, I administered a pre- and post-survey to PC 101 students, analyzed the survey data, facilitated data meetings to make potential adjustments to the Staying Connected Lessons, and held a reflection meeting with the PathwayConnect Program Council, SMEs, and the peer mentor manager, to think about possible future cycles of inquiry. The core team working on this study was the PathwayConnect Program Council, which was also known as the design team, and as its team leader, I engaged the Hill Model of Team Leadership (Hill, 2016), to monitor team performance, take actions as needed, and evaluate the team's effectiveness. Finally, as a measure to reduce bias and add credibility to the emerging findings, I kept a research journal to document the process and critically compare formative findings against my own worldview and expectations (Ivankova, 2014).

### *Instruction Manager*

As the instruction manager, Jane has expertise in how instructors facilitate the PathwayConnect curriculum. She formulates strategies for instructors to connect with struggling students, offer encouragement and help, and monitor trends demonstrated by the students. For example, if a student's participation seems low based on their assignment submission rates, or if they miss a submission on a particular week, she will help the instructor think through how to reach out to ascertain what the issue might be. Many students respond to this outreach with information about their challenging life circumstances that are impeding their participation in the online coursework, so Jane can also be monitoring for barriers and know-hows that could be brought into the study. Jane also helps instructors improve how they offer empathy to students and supports students who have fallen behind. As a result of these exchanges, Jane deeply understands the challenges that keep students from connecting to the online coursework and knows effective ways for instructors to respond to students so they can more easily overcome challenges.

Throughout the duration of the innovation, I asked Jane to provide feedback on the content and design of the Staying Connected Lessons and make sure the curriculum aligned to her perspective of the challenges and solutions of students in PC 101. She participated in the design meetings where she provided feedback on the formative data. She also attended the reflection meeting at the end of the study to help decide what the next cycle of inquiry might be. Further, Jane helped validate the pre- and post-innovation

survey to check that the questions elicited the kinds of responses that they were designed for.

### ***Program Designer***

Abish is the PathwayConnect program designer. She just received her master's degree in instructional design and is our new full-time instructional designer at BYU-Idaho. In this role, she provides dedicated support to the PathwayConnect courses PC 101, PC 102, and PC 103. Abish is a former PathwayConnect student and is native of Argentina, which helped her relate to the goal of improving students' connection to coursework. While Abish was new to this role, when she completed her bachelor's degree at BYU-Idaho, she worked with me as a teaching assistant supervisor, and we established a good working relationship.

Abish was responsible for making sure the Staying Connected Lessons were designed to provide transferability to students from outside the United States. During the design and reflection meetings, Abish lent her design expertise to help shape the communicate, validate survey questions, and envision possible next cycles of inquiry.

### ***Peer Mentors (SMEs)***

The peer mentor role has been newly established by BYU-PW as a key student service. Every BYU-PW student is assigned a peer mentor that serves as a resource and guide. Peer mentors are more advanced students who reach out to and coach their peers to help them succeed in their online degree programs. A criterion for being a peer mentor is success as students in the same degree program. In many cases, being successful means overcoming internet connection issues and other concerns. BYU-PW peer mentors live in

thirty-five countries spanning five continents. Because peer mentors demonstrate the kind of know-how wisdom explored by Lee et al. (2019) as related to how online students who are busy with life demands find ways to be successful with their online coursework, peer mentors were qualified to be SMEs in this study.

Peer mentors were hired by an outsourcing company that contracts with BYU-PW called Bloom. Bloom approved of the peer mentor questionnaire once it cleared IRB. They also vetted any peer mentors selected as potential SME finalists to make sure they didn't have performance issues that involved potential termination.

I chose six peer mentors to be SMEs from the pool of 399 BYU-PW students who had graduated from PathwayConnect and now function as peer mentors. The SMEs collaborated with the design team to determine the content of the Staying Connected Lessons. As such, we asked them to share their experiences, including their names, countries, and headshots. They provided design guidance in two of the design meetings. Later, they joined the design team to reflect on the study's impact to help determine future research cycles.

### ***Peer Mentor Manager***

As the peer mentor manager, Tala oversees the global operation of hundreds of peer mentors who are responsible for reaching out to BYU-PW students as needed, and being available to answer students' questions about enrollment, tuition, and technical issues. Tala has experience as a mentor herself and a peer mentor coordinator. She has an innate understanding of how students in many corners of the world struggle with internet connectivity and some of the solutions they have developed to overcome struggles.

Tala assumed the role of peer mentor manager a few weeks into the study, succeeding Samantha, who provided the initial list of peer mentors to be contacted about becoming SMEs. Tala provided feedback on the Staying Connected Lessons design as well as participated in the reflection meeting.

### ***PC 101 Students***

The PC 101 Life Skills course in Fall 2023 began with over 15,755 students from 142 countries. The Staying Connected Lessons were presented to approximately half of those students. It is typical for students approaching PC 101 to be nervous about their ability to succeed as university students and in an online environment. Though the weekly one-hour live gatherings provide peer support and encouragement, being an online student can be an isolating experience because most of the time students are alone with their device while studying the online curriculum. Typically, 25% of students who start PC 101 drop out by week 3 in PC 102. When asked about the reason for withdrawing from the program, they frequently report insufficient access to the internet. Those that persist in the face of connection challenges like this do so with perseverance and tenacity, and we can learn from their know-how wisdom. Those who succeed in PathwayConnect can move into their certificate programs on their way to a bachelor's degree.

All students in PC 101 were responsible for taking the pre- and post-innovation survey. I placed the Staying Connected Lessons in half of the student Canvas sections. This created a treatment group and a control group. Having these groups allowed me to compare the responses on the surveys between those who used the Staying Connected

Lessons and those who did not as a way of strengthening the analysis of the survey's results. The treatment group was responsible for viewing and engaging with the Staying Connected Lessons. This means they followed the invitations in the lessons to apply the know-how strategies in their unique contexts to fit their local needs. I invited them to share their experience doing this via three open-ended questions in the post-innovation survey. I tracked the retention of the treatment and control groups by measuring which of them were still enrolled by Week 3 of PC 102.

### ***Critical Friend***

Susan served as my critical friend. She was not directly involved in the research process but helped me make decisions about data at critical points in time. Susan is a graduate of the Arizona State University EdD program in Leadership and Innovation, and her knowledge of the dissertation study process provided me with feedback that helped me make the surveys more valid. Professionally, she works at BYU-PW as a director in student services and has previously served as the Dean of Students. Her extensive background supporting BYU-PW students in their technical challenges helped me shape the communicate so it could have transferability to PathwayConnect students.

A critical friend helped lessen my cognitive load by conferring with me about my progress, validating what she saw was working, and suggesting ways to tweak elements of the study so they were more efficient and effective. Susan provided feedback on the surveys and design of the Staying Connected Lessons. I met with her three times: (1) to refine the SME questionnaire design, (2) before Design Meeting 2 to discuss the overall

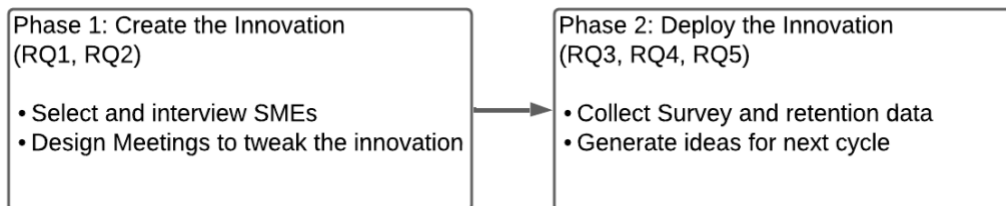
design approach, (3) between Phases 1 and 2 to check for the face validity (Pelz, n.d.) of the questions in the pre- and post- innovation survey written by the design team.

### **The Innovation**

The study was designed using a modified sequential mixed methods action research approach (Ivankova, 2015) during two phases. In Phase 1, data was used to design an innovation. Dedicating the first phase of an action research study to thoughtful planning for how that knowledge can be used to solve the problem of practice helps participants bring their best knowledge to the study (Dick, 2014; Mertler, 1999; Stringer, 1999). The outcome of Phase 1 was the Staying Connected Lessons (the innovation) with data from SMEs that facilitated the creation of the innovation. In Phase 2, the innovation was deployed and data on its impact on students collected and analyzed. See Figure 7.

### **Figure 7**

*Two-Phase Sequential Mixed Methods Action Research Design*



The steps, data collection, and data analysis were logically sequenced in this study. Data was central to the design of the phases and the analysis of data occurred at strategic times in the process. The following descriptions of the phases include operational events, data collection procedures, and data analysis measures.

## **Phase 1: Data-Driven Means to Create the Innovation**

The outcome of Phase 1 was the Staying Connected Lessons, which reified (Wenger, 1998) and taught know-how wisdom (Lee et al., 2019) shared by the peer mentors to students taking PC 101. Broadly, the aim of the Staying Connected Lessons was to help the PC 101 students stay connected with the online coursework by teaching them know-how strategies.

The design team was responsible for the instructional design decisions and for building out the Staying Connected Lessons for deployment within the PC 101 course shell. To support them to address the problem of equity through digital inclusion, I taught them about Warschauer's conceptual framework (Tate & Warschauer, 2022). Applying the framework helped the design team members consider how students needed to be provided with knowledge from knowledgeable others (Allal, 2016; Hadwin & Oshige, 2011; Hayes et al., 2015) who might help them to access and stay connected to their online coursework. Additionally, I shared with the team the benefits of applying SRL (Pintrich, 2000) to help us find creative ways to support students to adjust the strategies they use within their learning context so they can accomplish their learning goals (Pintrich, 2000).

During the design meetings, I did my best to apply the Hill Model of Team Leadership (Hill, 2016), to help me make a mental picture of our team's performance, cohesiveness, and of the conditions that surrounded our work. Further, this leadership model helped me establish how our roles and responsibilities came into play in this project and the responsibility I had for making sound decisions about how to support



team development and when to intervene as a decision-maker. I recorded notes about this mental picture in the research journal.

The Phase 1 tasks involved the researcher-practitioner identifying the peer-mentor participants as knowledgeable others who were willing to serve as SMEs as well as documenting the rich details of their know-how wisdom. Then, the program designer and I designed the Staying Connected Lessons in consultation with the SMEs, the instruction manager, and the peer mentor manager. As a final step, the program designer and I built the lessons in the PC 101 course shell. The details of these steps are explained next.

### *Selecting the SMEs*

To create the Staying Connected Lessons, I needed to identify and collect know-how wisdom from peer mentors who served as subject matter experts (SMEs). They would be SMEs in staying connected to the online coursework despite technology barriers. I could practically only use six peer mentors due to space limitations in the PC 101 course shell. I had to narrow the field of peer mentors and find a select few with compelling and differentiated know-how wisdom. To do this, I used the Peer Mentor Questionnaire (see Appendix D) to choose 10 finalists for interviews. The SME Interviews (see Appendix E) then gave me enough detail to invite six SMEs to participate. To participate in the questionnaire and interviews, peer mentors signed a consent form in June 2023. A copy of this form is available in Appendix C.

Before I administered the questionnaire, I worked with my critical friend to make sure the objective of the questionnaire was met, which helped increase the survey's validity (Ivankova, 2014). In the explanation of the questionnaire, the peer mentors were

made aware of the purpose of the study and the potential impact their involvement would have on other students. The questionnaire invited peer mentors to share important details about what had kept them in times past from staying connected to their online coursework, what they did to keep themselves connected, and why that was important to them. Peer mentors were also asked to provide their name, email, and country. The email was used to contact them for an interview. The country helped with the questionnaire analysis (See Peer Mentor Questionnaire Evaluation Rubric in Appendix E). Finally, the questionnaire asked peer mentors if they would be willing to participate further in an interview and potential future meetings. Peer mentors could opt out of any question as desired.

To select the SMEs, I used a modified non-probability sampling technique called quota sampling (Acharya et al., 2013; Martínez-Mesa, et al., 2016). Quota sampling is the process of obtaining study participants until a certain number are recruited in specified categories (Acharya et al., 2013; Martinez et al., 2016). In the case of this study, I first asked Samantha to narrow down the field of peer mentors to just those who were currently BYU-PW students. She supplied me with a list of 399 peer mentors. BYU-PW's relationship with Bloom, the company that hires the peer mentors on behalf of BYU-PW, required that only current students be recruited for studies. I sent the Peer Mentor Questionnaire to these 399 peer mentors.

An important selection criterion for me was the ability of the peer mentor to respond to requests for information in a timely way. Therefore, I only selected 90

responses to the questionnaire to look at further because they came within five days of me sending it.

I then used the peer mentor questionnaire evaluation rubric (see Appendix D) to narrow the field further. 78 peer mentors said that they had struggled in the past to stay connected to the online coursework and agreed to share their story with PC 101 students. I evaluated and scored their stories based on the degree to which they were relatable, differentiated, and compelling. Relatable meant the degree to which the peer mentor mentioned situations and problems common for students like time pressure, device issues, connectivity problems, family support, infrastructure problems, and motivation. Differentiated meant the degree to which the peer mentor's story illustrated one or more of the strategies from Pintrich's context area of SRL (2000) (see Table 9). Compelling meant the degree to which the peer mentor's story contained elements of struggle, sacrifice, cleverness in solutions, strength, determination, and growth mindset.

Since I was looking for 10 SME finalists to interview, I sorted peer mentors' total scores from highest to lowest and selected the top 10 names. Before I issued invitations to interview each of them, I sent their names to Bloom for their approval of the names. Bloom wanted to verify that anyone I chose to be a SME was not showing job performance issues that were threatening their own employment. Bloom approved all 10 names.

I then interviewed each of the 10 peer mentor SME finalists. In each interview, I asked the peer mentors to elaborate on their responses to the questionnaire. If participants seemed to be good communicators, I asked more of the questions from Appendix E,

including relevant follow-up questions. Good communicators shared their thoughts and feelings freely, clearly, and in abundance. This was important as SMEs were responsible to communicate their know-how wisdom in three places: (a) for the Staying Connected Lessons, (b) in Design Meeting 2, (c) in the final reflection meeting. If finalists did not seem to be good communicators, I cordially ended the interview early, thanking them for their insights, and informing them that I would reach out if I wanted to engage further. For those who were good communicators, I continued the interview and took note of their rich know-how wisdom using the interview questions in Appendix E. These questions focused on Pintrich's four strategies in the context area of SRL (Pintrich, 2000). Organizing responses this way was originally supposed to help me sort and select the SMEs whose stories clearly represented one of the strategies (see Table 6). However, peer mentor interview responses showed a combination of these strategies. When I gave peer mentors a score in each of the four categories, many of them scored high in each category.

**Table 6**

*Applications of Pintrich's Context Area of SRL*

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SRL Strategies	Possible Application of SRL Strategy for Online Learners
Perceive the context	Students think about the environment in which they will engage in their online coursework and consider how they will be able to stay connected given past and current conditions.
Monitor changing task and context conditions	Students monitor their Wi-Fi or landline Internet signal to make sure they are still connected. If they are on a metered data connection, they consider how much data they have used so far.
Change or renegotiate task; Change or leave context	Students reposition themselves to reacquire a Wi-Fi signal, landline, or power, adjust their study plan to finish what they can before they run out of data, or make a plan to find electricity in time to complete coursework by the deadline.
Evaluate the task; Evaluate the context.	Students reflect on their study session in terms of their internet connectivity. They use this information to engage in Phase 1 again later.

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*Analyzing Peer Mentor Questionnaire and Interview Data*

To help me narrow the 10 finalists to six SMEs, I conducted an analysis of the qualitative data from a sample of the questionnaires and interviews. The results of this analysis gave me four themes that I used to differentiate the finalists. The results also answered RQ1 (what are the know-hows?) and helped inform the answer to RQ2 (how to teach the know-hows). I engaged in two qualitative analysis approaches to make sure I didn't miss important findings from the data. Each approach included two cycles.

**Approach 1.** In the first cycle of Approach 1, I used hypothesis coding (Saldaña, 2021) to assign codes to the data based on their relationship with an existing theory, in this case, SRL. I followed this with code charting (Saldaña, 2021) to see which codes were associated with which peer mentor. Doing so helped me begin to see clusters of codes around each peer mentor relative to their use of SRL. Most peer mentors mentioned having significant struggles with technology, but using strategies to plan ahead so they could stay connected to the online coursework. These plans included an awareness of data costs and the time of day when data would be cheaper or places where they could access the internet for free. Device issues also arose frequently accompanied by strategies to borrow computer time on devices they didn't own. In Cycle 2, I used pattern coding to identify nine categories from the data (ask for help, borrow technology, focus on your why, manage time, off the grid, plan A and B, reduce cost, reduce distractions, sacrifice). Pattern coding involves looking through the codes and deciding how they cluster into groups (Saldaña, 2021). Peer mentors were tenacious in asking family and friends for help with computer and internet time. They were keenly aware of the cost of technology and made sacrifices of money and time so they could keep themselves connected. Many employed plans with backup plans. Finally, peer mentors kept themselves motivated by focusing on their Why.

**Approach 2.** Approach 2 yielded data that was concentrated around fewer groupings. In Cycle 1, I used structural coding, in which I assigned broad codes to entire pages of data first, and then looked for subdivisions within the broader codes and assigned subcodes to each page. Doing this helped me discover how peer mentor data fit

into Pintrich's four stages of SRL in the context area: (1) perceive context; (2) monitor task and context conditions; (3) change or renegotiate task, change or leave context; (4) evaluate task, evaluate context (2000). After Cycle 1, I used a pie chart to visually see how many pages of data represented each of Pintrich's four stages of SRL (2000). Half of the data pertained to changing or renegotiating the task, while a third related to monitoring task and context conditions. In Cycle 2, I arranged the subcodes from Cycle 1 to create four themes. I did this to find a suitable number of topics around which I could base the innovation or Staying Connected Lessons. In Cycle 1, I assigned one of Pintrich's four stages of SRL in the context area (2000) to each page of data, but the results were uneven as most pages related to just two of those four stages. In Cycle 2, I found four major themes, and I decided to use these themes as the topics for the Staying Connected Lessons: (a) focus on your why, (b) have a plan, (c) get help, (d) sacrifice. While both qualitative analysis approaches showed that SRL was clearly present in the data, Cycle 2 of Approach 2 yielded a diverse set of strategies that would produce a varied set of lessons for students in the innovation. See Table 7.

**Table 7***Themes from Peer Mentor Data*

Theme	Representational Passage	Interpretive summary
Focus on your Why	“...the fear of losing this great opportunity of acquiring education and my purpose was the major drive that kept me solely motivated, thus I could hardly back out even with the many barriers that I encountered.”	Many factors can be barriers to students as they get connected and stay connected to the online coursework, but having an inner motivation seems to help students navigate these challenges. Your Why is the reason why you have chosen this path. Because it is deeply connected to who you are and the choices you have made, the motivation it engenders is intrinsic, which can be powerful and self-sustaining.
Have a Plan	“Because of power issues, network also becomes a challenge.... So, most often, I normally have two backup plans for me to use.	Having a plan and backup plans is a hallmark of students who have successfully maintained their connection to the online coursework. Due to volatility in power, internet service, and sometimes device health, having multiple plans helps students absorb technology hiccups and keep going.
Get Help	“I used to ask friends and sometimes used my work computer during lunch break when everyone has gone out for lunch. This went on for the whole PathwayConnect year.”	Students need to be willing to reach out to others for help. This includes friends, family, neighbors, co-workers, their local church, and to God. Students who get and stay connected to their online coursework are those who can identify help resources and not be afraid to access them.
Sacrifice	“...you should be willing to give something, and you should be willing to say, ‘What is it that I’m going to give so that I... succeed.’”	Getting and staying connected to the online coursework can be difficult. Students who are successful must sacrifice time and money to make it work.



With these themes in hand, and while reviewing my notes and the recordings of the 10 SME finalist interviews, I looked for six SMEs that had these traits:

- Is a good communicator
- Is an exemplar of one of the four themes
- Represents a unique country from around the world
- Allows for at least one male or one female among the SMEs

Doing this created a pool of SMEs whose stories would resonate the most with the greatest number of students from around the world. Table 8 represents the SMEs I invited to participate. All of them said yes. The names have been changed to protect their identity. Figure 8 illustrates the entire sampling process.

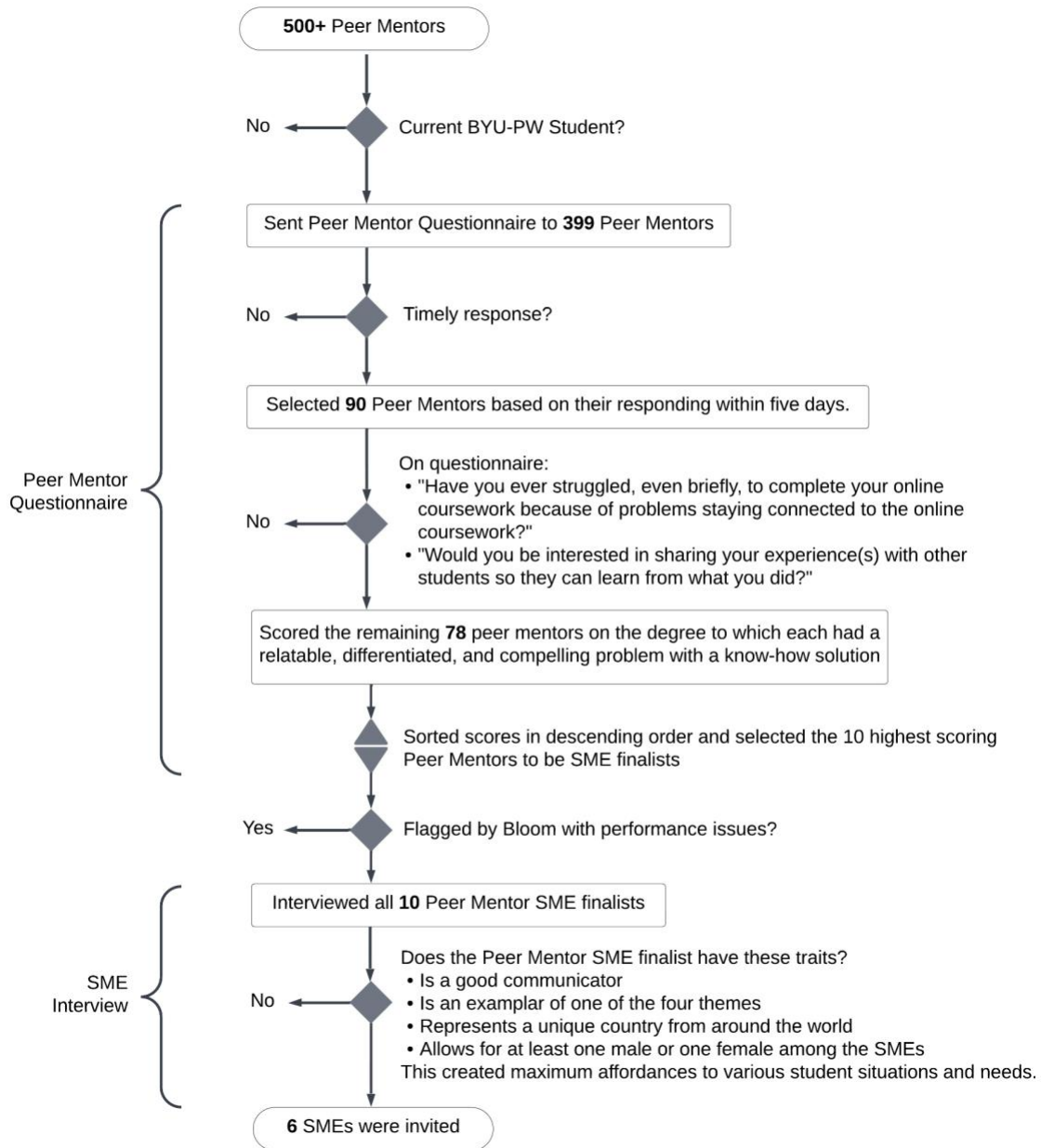
**Table 8**

*Subject Matter Experts (SMEs) Who Agreed to Participate*

Name	Theme	Country	Gender
Nancy	Have a Plan	Philippines	Female
Adea	Focus on Your Why	Nigeria	Female
Jemila	Sacrifice	Zimbabwe	Female
Maribel	Have a Plan	Argentina	Female
Ashanti	Get Help	Uganda	Female
Hakim	Sacrifice	Ghana	Male

**Figure 8**

*Modified Non-Probability Sampling to Select SMEs.*



*Conducting Design Meetings and Analyzing the Resulting Data*

I facilitated five design meetings that were supported by my interactions with my critical friend. An analysis of the data generated from these meetings answered RQ2

(how to teach the know-hows). Table 9 shows the participants, the outcome, and the data that was generated by each meeting.

**Table 9**

*Design Meeting Participants, Outcomes, Data Gathered*

Mtg.	Who Attended	Outcome	Data Generated
<i>Meeting #1 with critical friend to refine the Peer Mentor Questionnaire</i>			
1	Researcher- Practitioner Program Designer	Refined a Staying Connected Lesson prototype design that has maximum transferability	Initial innovation design
<i>Meeting #2 with critical friend to refine design of Staying Connected Lesson prototype</i>			
2	Researcher- Practitioner Program Designer Instruction Manager SMEs	Elicited SME feedback on the prototype design	SME feedback regarding transferability to PC 101 students
3	Researcher- Practitioner Instruction Manager Peer Mentor Manager	Elicited feedback from Instruction Manager and Peer Mentor Manager on the prototype design; clarified how their employees could use the lessons	Instruction and Peer Mentor Manager feedback on the innovation
4	Researcher- Practitioner Program Designer	Incorporated feedback from prior meetings into the lesson design; wrote pre- and post-innovation survey questions to place alongside of Pintrich's (1991) time and study environment questions	Innovation modifications based on prior feedback; survey questions
5	Researcher- Practitioner Program Designer Instruction Manager	Elicited feedback on the lesson design; used the <i>face validity</i> (Pelz, n.d.) technique to validate the pre- and post-innovation survey questions we had written	Final feedback from program council; validation feedback on the pre- and post-innovation survey questions
<i>Meeting #3 with critical friend to check the face validity (Pelz, n.d.) of the questions written by the design team for the pre- and post-innovation survey</i>			

During all design meetings I applied Hill's model for team leadership (Hill, 2016) to ensure team effectiveness. Design meeting participants, as well as the critical friend, signed a consent form. A copy of these forms is available in Appendix C.

**Design Meeting 1.** Action research affords changes in study design based on formative data (Stringer, 1999). Before Design Meeting 1, I realized from the Peer Mentor Questionnaire and interview data that my original plan to organize the Staying Connected Lessons around Pintrich's (2000) four context area strategies of self-regulated learning (see Table 6) was not going to result in high transferability to PC 101 students. This is because the data showed that peer mentors used multiple strategies simultaneously. Focusing discreet Staying Connected Lessons on each strategy would force me to exclude or de-emphasize the strategies they were organically weaving into their behaviors. Moreover, titles like "Perceive the Context," or "Monitor Changing Task and Context Conditions," would have presented too much jargon. RQ1, and RQ2 were student focused, meaning they discovered student know-how strategies and determined effective transferring of those strategies to students. To help the Staying Connected Lessons keep that student-to-student focus, I decided to organize them around the four themes that emerged from peer mentor responses to the questionnaire and interviews: (a) focus on your Why, (b) have a plan, (c) get help, and (d) sacrifice. Doing so would mean more resonance with PC 101 students.

Prior to Design Meeting 1, I created a Staying Connected lesson prototype focusing on one of the four themes: focus on your Why. At the meeting, the program designer, Abish, and I considered how the prototype could be improved so as many

students as possible could learn from it. According to the Hill model for team leadership, team leaders can decide to take internal leadership actions which will help train team members to perform their roles (Hill, 2016). To do this, I elicited design ideas from Abish to help her gain confidence in her new role with PathwayConnect. This also allowed her to use her personal experience as a PathwayConnect student living in Argentina to shape design ideas for transferability to a multinational student audience. Leveraging expertise like this also built a collaborative spirit which invited Abish to take creative risks (Hill, 2016). The result of our collaboration was a second draft design of the Staying Connected Lessons with two additions from Abish: (a) a threaded discussion; (b) helpful headers to boost comprehension.

To prepare for Design Meeting 2, I used the new design to write drafts of each Staying Connected Lesson, and I sent them to the SMEs. I asked them to consider how well they thought the lessons represented their know-how strategies and how they thought the design could be improved so students in PC 101 could make use of them.

**Design Meeting 2.** The SMEs joined me, the program designer, and the instruction manager during the second design meeting. At the beginning of the meeting, the SMEs were asked to give their impression of the Staying Connected Lesson drafts and provide helpful feedback on the design. I asked the SMEs to share their ideas about how we could make the design more appealing since the lessons were to be presented as static content in the online curriculum. These questions guided our conversation and brainstorming:

- Does this message accurately represent your strategies to stay connected to the internet despite connection challenges?
- Do you think other students will understand this message? Will it resonate with them in some way?
- How might we improve how your know-how strategies are shared so that other students will identify with them and be inspired to take the same steps?

Meeting participants expressed praise for the material in the Staying Connected lessons. All the SMEs were excited to see stories like theirs in the curriculum, and they said that many students would identify with the challenges they contained. Two SMEs felt the discussion prompt at the end of each lesson should include specific invitations to comment on the students' own experiences and spiritual motivations for staying connected. I used this input to continue shaping the discussion prompt.

While all the SMEs felt the lesson and discussion should be graded to encourage participation, Jane, the Instruction Manager, said that her grading staff wasn't prepared to take on an additional item. As a result of this feedback, we compromised. While I didn't make the lessons and discussion participation a graded item in the course, I did add it to the students' to-do list in the Canvas shell, and I assigned a to-do date. This elevated the visibility of the Staying Connected lessons among the rest of the coursework.

**Design Meeting 3.** Meeting 3 involved me working with the instruction manager, Jane, and peer mentor manager, Tala to gather their feedback on the Staying Connected Lessons. As part of this, I facilitated a conversation about how the lessons could be used by instructors and peer mentors as part of their jobs. The challenge of internet

connectivity is a broader concern that more closely aligns with the peer mentor manager's purview. However, the lessons were going to reside in the coursework, the instructors' domain. We needed to decide how instructors and peer mentors would possibly use the lessons without overstepping their roles. As I did this, I took an external leadership action in the Hill Model of Team Leadership (Hill, 2016) to clarify the roles of the peer mentor office and the PathwayConnect Program Council relative to supporting students with general course access concerns.

Both Jane and Tala liked the lessons and expressed interest in supporting them universally after this initial study. As part of their job, instructors point out important parts of each week's reading and work. Jane had instructors in the treatment sections point out the Staying Connected lessons and encourage students to engage there. This, she pointed out, would create a genuine atmosphere for students in the treatment sections since pointing out curriculum content is a normal part of the instructor to student communication loop. Tala could not have peer mentors use these materials yet since peer mentors were not assigned to students based on Canvas sections. They would not know if a student they engaged with was in a treatment or control section. For the future, this kind of content could be released to every section, and then peer mentors could refer to them as they interact with students.

Finally, there was an understanding between the role of the instructor and the peer mentor when supporting students. While instructors support students within the confines of a course, peer mentors support students more broadly. For instance, instructors help students understand, prepare for, and succeed in course materials and assessments. They

can adjust due dates if they feel a student has a particular need for flexibility. Peer mentors help students identify resources to resolve broader questions and concerns. This includes connecting to the internet, overcoming device issues, and generally staying engaged with the program. Given these distinct roles, there is still overlap, and in this meeting, I wanted to give Jane and Tala some time to discuss this overlap so I could get a feel for where they stood on it. It was apparent that they were both very comfortable sharing the overlap. Where a student struggles to stay connected to the online coursework and thereby struggles to prepare for and succeed in course materials, the instructor needs to be in the loop so they can understand the student's concern and adjust due dates if needed. A peer mentor can also be involved to coach the student to find resources to resolve the connection issue.

While Tala is not on my team, the PathwayConnect Program Council, Jane is, and as part of the Hill Model of team leadership, I wanted to see if I needed to take an external leadership action beyond the one taken through this meeting. This means doing what I could to help Jane succeed in her role given broader organizational dynamics outside of our program council team. However, given Jane's comfort with how the instructor role overlaps with the peer mentor role, I didn't think a further external leadership action was necessary. Jane and Tala had clearly worked this out already.

**Design Meeting 4.** In the fourth design meeting, I worked with the program designer, Abish, to review notes from the prior meetings. Our objectives were to incorporate feedback from prior meetings into the lesson design as well as decide which questions to add to Part 2 of the pre- and post-innovation survey (see Appendix G), which



would help us measure the extent to which teaching students know-hows changes their use of strategies that help them persist (see RQ3). To write appropriate questions, we considered what peer mentors said in the Peer Mentor Questionnaire (see Appendix D) and SME Interviews (see Appendix E) and wrote questions to find out the extent to which PC 101 students applied the same strategies. As described earlier, qualitative analysis of the peer mentor data revealed nine categories: (ask for help, borrow technology, focus on your why, manage time, off the grid, plan A and B, reduce cost, reduce distractions, sacrifice). These categories related closely to the four themes that also emerged through qualitative analysis of the peer mentor data (get help, focus on your why, have a plan, sacrifice). These were the themes that I used to thematically organize the Staying Connected Lessons:

**Table 10**

*Relationship of Categories and Themes from Peer Mentor Data*

Categories	Themes
Ask for Help Borrow Technology	Get Help
Focus on your Why	Focus on your Why
Manage Time Off the Grid Plan A and B Reduce Distractions Reduce Cost	Have a Plan
Sacrifice	Sacrifice

We wrote 12 Likert scale questions to ascertain the degree to which students engaged in behaviors connected to these nine categories and four themes. Since the categories and themes came from peer mentor data (the know-hows), we felt confident that they were helping us measure RQ3, or the extent to which teaching students know-hows changed their use of strategies that helped them persist. Table 10 shows these 12 questions mapped to the four themes. Mapping like this helped us decide if we had enough questions around each theme. We included the 12 questions in Part 2 of the pre- and post-innovation survey alongside Pintrich's eight Likert scale questions from the time and study environment construct of the Motivated Learning Strategies Questionnaire, or MLSQ (1991).

The MLSQ has been validated by Pintrich (1991) and used by researchers to measure SRL for two decades in both traditional and online learning contexts (Lee et al., 2013; Broadbent & Poon, 2015; Kizilcec, et al., 2017; Meijs et al., 2021). The time and study environment construct of the MLSQ measures students' abilities to manage their time studying and the learning environment in which they study (Pintrich, 1991). This is an appropriate construct to use relative to the Staying Connected Lessons because it ascertains the degree to which a student stays dedicated to the learning task through time and environment management. If technical issues for online students threaten this dedication, and if students find ways to overcome those issues, the extent to which they report a high use of these strategies in this construct might reflect use of the concepts presented in the Staying Connected Lessons.

We included our questions along with Pintrich's questions in the survey for two reasons. First, Pintrich's MLSQ does not ask about the online study environment. Our questions do. Second, Pintrich's questions have been validated using factor and predictive validity (Pintrich, 1991) while our questions will not have that validation. When analyzing the responses to our questions alongside the responses to Pintrich's questions, we correlated the two sets of responses in a convergent validity effort (Pelz, n.d.). We knew that the closer the distributions, the more valid our questions would be. The pre- and post-survey took about 5-10 minutes for students to complete (See Appendix F). It was created in Qualtrics and distributed through the PC 101 Canvas shell to both the control and treatment groups. Students were able to opt out if they chose.

**Table 11***Survey Questions Mapped to the Four Themes*

Questions	Get Help	Focus on Your Why	Have a Plan	Sacrifice
<b>To stay connected to the online coursework...</b>				
I ask for help as often as I need.	x		x	
I make sure I have access to a computer, tablet, or phone, even if I don't own one of these.	x		x	x
I study where I will have as much electricity or battery power as possible.	x		x	x
I plan ahead so that I have enough time to use the internet when it is available.	x		x	
I do what is necessary to reduce distractions.			x	
<b>To stay connected to the online coursework...</b>				
I use the internet when it is faster and more reliable	x		x	
I use the internet when it is less expensive	x		x	
<b>I am motivated to stay connected to the online coursework even when it is difficult because...</b>				
I remember why I am doing this.		x		x
I really want to complete this educational program		x		x
I believe that getting an education is a religious responsibility.		x		x
I want to set a good example for my family or prepare myself to support my family better.		x		x
I want to prepare myself to support my family better.		x		x

**Design Meeting 5.** Design Meeting 5 gave me an opportunity to call together the PathwayConnect Program Council (myself as the chair, the program designer, and the instruction manager) to look at the final Staying Connected Lessons design and incorporate any final feedback about it. Feedback focused on increasing the transferability of the concepts in the lessons given their design constraints, which included being in an online asynchronous course and displayed using static text and images.

In addition, I facilitated a critical review of the pre- and post-innovation survey questions written in Design Meeting 4. The goal was to evaluate the degree to which the questions asked students about the strategies they used to get and stay connected to their coursework using face validity. “Face validity refers to whether an indicator seems to be a reasonable measure of its underlying construct on its face” (Pelz, n.d., p. 7). This is a theoretical assessment of validity, which “focuses on how well the idea of a theoretical construct is translated into or represented in an operational measure” (Pelz, n.d., p. 6). For example, the frequency that a person drinks soft drinks is a reasonable measure of a person’s affinity for soft drinks. It is an indicator with face validity. In the case of this dissertation study, a response to the survey question, “To stay connected to the online coursework, I make sure I have access to a computer, tablet, or phone, even if I don’t own one of these,” would be a good indicator that students are applying the know-how of Have a Plan. Pelz (n.d.) explains that for overly abstract constructs, a panel of experts should evaluate their face value, but the pre- and post-innovation survey asked about very concrete concepts and behaviors like doing what is necessary to reduce distractions.

Because the questions were concrete, the face validity was more easily determined in Design Meeting 5.

Finally, during this meeting I made a “mental model” (Hill, 2016, p. 366) of my team’s performance in their various roles throughout the design meetings. Following Hill’s procedure (2016), I then used this mental model to decide if any intervention was needed to help the team improve its performance from an output or a cohesiveness standpoint. Because members of the program council helped me validate the pre- and post-innovation surveys and participated in the reflection meeting, this milestone gave me opportunities to either continue monitoring team performance or to take action.

As a final check on the survey’s face validity, I invited my critical friend to review the pre- and post-innovation survey questions written in Design Meeting 4. Her outside opinion was not influenced by the design team and provided an important check against bias (Ivankova, 2014).

### ***The Final Design of the Staying Connected Lessons***

After Design Meeting 5, I finalized the design of the Staying Connected Lessons. The goal of this design was to facilitate a transfer of the SME’s know-how wisdom to PC 101 students in an asynchronous co-regulation situation whereby the SMEs demonstrated SRL to students through static text (Allal, 2016). The final design included

- an introduction that defined the broad issue of struggling to stay connected to the online coursework despite technology issues. This included a hook with the SME’s name, and which theme, or strategy, they used to stay connected (i.e., focus on your why, have a plan, sacrifice, get help).

- a callout box with a headshot of the SME, country of residence, and a brief quotation from the SME describing the specifics of his or her connection struggles.
- sections describing
  - **The Need:** The SME described what he or she needed to do because of their struggles connecting to the online coursework (e.g., stay caught up in class, download assignments, finish what I started).
  - **The Inspiration:** The SME shared a scripture that inspired him or her to stay connected even if it was difficult.
  - **The Solutions:** The SME described three or four practical steps he or she took to stay connected.
- several discussion prompts that invited students to share
  - what they related to
  - how the SME situation might help them
  - what scripture inspired them to stay connected
  - whether or not they plan to adopt the SME's solution and if so, how

See Appendix H for screenshots of each Staying Connected Lesson in the Canvas course shell.

## **Phase 2: Deploy the Staying Connected Lessons**

During Phase 2, I deployed the Staying Connected Lessons in PC 101. At the end of this phase, I was able to study the impact on students who attempted to use one or

more of the know-how strategies (RQ3) and who persisted to the end of the course (RQ4).

In the Hill Model of Team Leadership (Hill, 2019), the team leader monitors team performance and cohesiveness and takes actions to keep the team running smoothly and productively. During this phase, as I interacted with the PathwayConnect program council, I listened for any negative feedback from Jane relative to how the Staying Connected Lessons were going. This was an internal leadership action in which the leader keeps the team focused on its goals (Hill, 2016).

During Phase 2, PC 101 students engaged with the Staying Connected Lessons over several weeks of the course and took the pre- and post-innovation survey (see Table 12). The survey demonstrated how and the extent students changed their use of strategies to help them persist (RQ3). Survey participants signed a consent form. A copy of this form is available in Appendix C. PC 101 student persistence was measured by retention data, which was collected on day 15 of PC 102 (RQ4).

### ***Select PC 101 Sections***

Ethically, random sampling in action research allows the researcher to try interventions with a subset of students without incurring the cost of a full-scale test. For BYU-PW students, being in a treatment group presents two costs. First, adding material to their courses means they must spend additional time in the course. Second, students who have a metered internet connection and pay for data by the megabyte will incur additional data costs to access the Staying Connected Lessons. In some extreme cases, students spend more on internet data to access the coursework than they do on tuition



costs, and some must skip meals to pay for data. For these reasons, sampling a subset of the population can allow action researchers to study an innovation while reducing the number of students who bear the cost of the innovation. Ivankova (2015) calls this “simple random sampling” (p. 184) within action research, and that doing so can help the researcher find study participants who are representative of the entire population. In Fall 2023, the computer placed 11,456 students into 64 sections of PC 101. I needed to divide those 64 sections into even treatment and control groups.

To make each group, I employed a series of steps using a spreadsheet. Each section of PC 101 had an identifying number (e.g., 1001, 1002, 1003, etc.). I listed all the section numbers in one column. In an adjacent column, I used a formula to generate a random number next to each section number. I then sorted both columns by the random number column, in descending order. In this way, the section numbers appeared in a random order. I then labeled the first 32 sections with heads - treatment and the last 32 sections as tails - treatment and flipped a coin. The coin landed on heads, and thus the first 32 sections became the treatment group, and the last 32 sections the control group.

On Day 1 of the term, I checked the randomization of the treatment and control groups by looking at the dispersion of three student characteristics: gender, domestic (lived in the U.S. or Canada) versus international student, and age. I found an even dispersion of students on these characteristics between the treatment and control groups. This helped me feel more confident that these three characteristics would not cloud the survey results.

With PC 101 sections designated as part of the treatment or control groups, I then deployed the Staying Connected Lessons into the treatment group. I placed the pre-innovation and post-innovation surveys into both groups (see Table 12).

**Table 12**

*Organization of Surveys and Staying Connected Lessons in PC 101*

Week	Item	Treatment Group	Control Group
1	Pre-innovation survey	✓	✓
2	Staying Connected: Focus on Your Why	✓	
3	Staying Connected: Have a Plan	✓	
4	Staying Connected: Sacrifice	✓	
5	Staying Connected: Get Help	✓	
6	Staying Connected: Sacrifice	✓	
7	Post-innovation survey	✓	✓

***Administer the Pre-Innovation Survey***

This survey was used to gather data on the PC 101 Students' educational background as well as their use of self-regulated learning strategies related to their use of strategies to stay connected to the online coursework despite technical barriers. The Staying Connected Lessons began in week 2, so I directed the student to take the pre-innovation survey in Week 1 of PC 101. I did this by adding a page to the PC 101 course shell that contained the recruitment letter (see Appendix C) and a link to the online survey hosted by Qualtrics. The page in the Canvas shell featured a To Do date, but no points were associated with completing the survey.

### ***Administer the Post-Innovation Survey***

The post innovation survey was identical to the pre-innovation survey to facilitate statistical comparisons between the treatment and control groups. Student responses to the post- survey were collected from Week 6 to the end of the term. This survey was also hosted by Qualtrics. The data generated from these surveys helped me answer RQ3. To further answer RQ 3, the treatment group got some extra questions at the end of the post-innovation survey. One measured the extent to which they engaged with the Staying Connected Lessons. Several open-ended questions followed, which allowed students to share how they used the lessons to stay connected to the online coursework (See Appendix F).

### ***Obtain PC 101 Retention Data***

BYU-PW measures student retention in PC 101 as the persistence of students enrolled between day 15 of PC 101 to day 15 of PC 102. During the first fourteen days of a course, non-participating students who have not submitted any assignments are auto-dropped to prevent them from receiving an F and a tuition charge (see Appendix B). I retrieved a list of PC 101 students as of Day 15, after the auto-drop occurred. I then obtained a list of PC 102 students on Day 15, after the auto-drop of that course. I used this data to compare the retention of students between the control and treatment groups so I could answer RQ4.

### ***Responsible Data Management and Safekeeping***

To keep the integrity of all incoming data, I organized it by subfolders in secure password-protected electronic systems. Questionnaire and survey response data was

housed in a Qualtrics account managed by BYU-Idaho. BYU-PW currently uses BYU-Idaho's Qualtrics account for all their surveying. Zoom video recordings and computer-generated transcript data was housed inside of the BYU-PW Zoom account.

### **Summary**

In summary, this action research study employed a modified sequential mixed methods design whereby initial data gathering and analysis informed later components. In Phase 1, Peer mentor SMEs provided their know-how wisdom, which was designed into the Staying Connected Lessons and deployed into PC 101 by the program designer and me after incorporating important feedback from SMEs, the instruction manager, and the peer mentor manager. In Phase 2, I collected and analyzed student data on the impact of the Staying Connected Lessons in their efforts to stay connected to the online coursework and their retention in the course.

## CHAPTER 4

### DATA ANALYSIS AND RESULTS

In this chapter, I will report analysis and findings from Phase 2 of the study, specifically the results of integrating the innovation into coursework to measure RQ3 (impact of know-how use) and RQ4 (impact on persistence). In doing so, I will explain the quantitative analysis and findings of the pre- and post-innovation survey and retention data and share descriptive statistics, reliability of the data, and comparisons between the treatment and control groups. I will also present qualitative analysis and findings for the survey's open-ended questions.

#### **RQ3 – Impact of Know-Hows: Quantitative Results**

RQ3, which explored the extent to which students changed their use of strategies to persist in the course, was measured by the pre- and post-innovation surveys. The treatment and control groups took both surveys, which allowed me to compare the differences between the two groups.

#### ***Data Clean-Up***

Response rates for the pre- and post-innovation surveys ranged from half to two-thirds of those who were invited to take them. I only used responses that used the same unique identifier between the pre- and post-innovation surveys (matched). I also removed duplicate responses, those that used the same unique identifier within the pre- or post-innovation surveys. These actions reduced the dataset of each group to about a quarter of those who took the post-innovation survey (see Table 13).

**Table 13***Engagement With the Pre- and Post-Innovation Surveys*

Group		Pre-	Post-
Treat	Invited	7,873	5,808
	Responded	5,150	3,064
	% Responded	.65	.53
	Pre- to Post- Matched		789
	Pre- to Post- Matched %		.26
Control	Invited	7,882	5,856
	Responded	5,697	3,330
	% Responded	.72	.57
	Pre- to Post- Matched		978
	Pre- to Post- Matched %		.29

*Note.* Fewer students were invited to take the post-innovation survey because of the auto-drop which removed non-participating students each term after Day 15.

***Educational Preparation***

Part 1 of the pre-innovation survey contained three questions meant to ascertain the educational preparation of participants. Success in school is a good predictor of further success in school, including prior success before college (Pascarella & Terenzini, 2005). Determining the prior success of the participants in this study was a way to strengthen any findings about the impact of the innovation by ruling out an imbalance in educational preparation between the control and treatment groups. In other words, if one group seemed to be more educationally prepared than another, it would be harder to tell if that imbalance was contributing to any differences in mean responses to Part 2 of the

survey. The distributions of responses to these questions between treatment and control groups were similar, indicating that both groups had the same number of prior years in school, similar prior grades, and similar prior absenteeism from school. For instance, 73% of the treatment group reported obtaining eight or more years of prior schooling, while 71% of the control group reported the same. 95% in each group reported sometimes, mostly, or always getting high marks on prior schoolwork. 86% in each group indicated that they missed school sometimes, rarely, or never (See Appendix I).

The means of the three educational preparation questions were very similar between the treatment and control groups. See Table 14.

**Table 14**

*Three Indicators of Educational Preparation*

Questions	Group	N	M	SD
Prior Years in School	Treatment	789	3.20	1.21
	Control	978	3.18	1.21
Prior Grades	Treatment	784	3.74	0.76
	Control	968	3.78	0.80
Prior Absenteeism	Treatment	737	2.79	0.91
	Control	916	2.80	0.91

The necessary assumptions for an independent sample t-test were met (independence, normality, homogeneity of variance). After I completed independent sample t-tests on all three of these indicators, grouping by control or treatment group, I found that any differences were insignificant (see Table 15). This indicated to me that the treatment and control groups were randomized.

**Table 15***Independent Samples T-Test Grouping by Control and Treatment*

	t	df	sig
Prior Years in School	0.43	1765	0.67
Prior Grades	-1.12	1750	0.26
Prior Absenteeism	-0.20	1651	0.84

*Measuring SRL and Use of Know-Hows*

Part 2 of the pre- and post-innovation surveys contained 7-point Likert-scale questions. The first set, comprising questions 1-8, was taken from Pintrich's time and study environment construct in the MLSQ (1991). Henceforth, I will call this set "Pintrich." The second set, comprising questions 9-20, was written by the design team (DT) in the design meetings. Henceforth, I will call this set "DT." See Appendix F for the complete set of questions.

Pintrich published a Cronbach Alpha ( $\alpha$ ) score for his items: .76, indicating acceptable internal consistency reliability (1991). I computed the same test for PC 101 students' taking of the Pintrich items and compared the results to Pintrich's (1991) and found a similar result of good internal consistency reliability. I then obtained a Cronbach Alpha for the DT items and found a similar result. See Table 16 for the alphas obtained for treatment and control groups on both the Pintrich and DT items. The acceptable internal consistency reliability supported combining the scores of the Likert items and conducting tests on the mean score for each student as opposed to the score for each student on each item.



**Table 16***Internal Consistency of Survey, Part 2 Items*

Group	Pintrich $\alpha$ (n = 8)		DT $\alpha$ (n = 12)	
	Pre	Post	Pre	Post
Treatment	.73	.75	.75	.75
Control	.72	.73	.73	.76

*Note.*  $.8 > \alpha \geq .7$  is considered acceptable.

Table 17 shows the mean scores of both groups on Part 2 of the pre- to post-innovation survey. Since each item was on a seven-point Likert scale, the maximum mean was seven. For both groups, the difference in mean from the pre- to the post-innovation survey was practically insignificant. The treatment group gained .28 from pre- to post- and the control group gained .23.

**Table 17***Mean Scores of Survey, Part 2*

Group	Means	N	Min	Max	M	SD
Treatment	Pre-Innovation Survey	789	2.10	7	5.61	.72
	Post-Innovation Survey	789	2.65	7	5.88	.70
Control	Pre-Innovation Survey	978	2.55	7	5.60	.72
	Post-Innovation Survey	978	1.80	7	5.84	.69

To test for statistical significance in the difference in means from pre- to post-survey, grouped by treatment and control group, I ran an independent sample t-test. Because all responses were unique, the distribution was normal, and the variance sufficiently homogeneous, the independent sample t-test was appropriate to use. The difference in means was still not significant ( $t_{(1765)} = 1.40, p < .16$ ). This indicates that

even though the treatment group participants showed a slight gain in their mean score from pre- to post- (.03), statistically speaking, the scores of both groups were the same. This part of the survey was not, therefore, able to provide evidence of the change in behaviors because of the innovation.

As previously noted, the number of participant responses was a narrower subset of the total dataset. The dataset was reduced because some students did not use the same unique identifier between the pre- and post-innovation surveys, so their data could not be matched. To test if these responses were representative of the larger dataset, I combined the treatment and control groups and tested the prior grades of the matched to non-matched students using an independent sample t-test. After satisfying the assumptions for using this test, (independence, parametric, homogeneity of variance), I found that while the matched group had slightly better prior grades than the non-matched group, the measurement was statistically significant, but the effect size was very low ( $t_{(6393)} = -3.54$ ,  $p < .001$ , Cohen's  $d$  point estimate =  $-.099$ ). This indicated that the matched subset was representative of the rest of the dataset.

### ***Measuring Use of the Staying Connected Lessons***

Part 3 of the pre- and post-innovation survey featured three questions asking about (1) the extent to which students used the Staying Connected lessons, (2) the extent to which they posted a comment in the lessons, (3) the extent to which they learned something new or were motivated to connect more with the online coursework. Since these questions focused on the innovation, only the treatment group got them. The results could shed light on the impact of know-how use (RQ3).

For the first question, 760 (96.4%) of the participants reported that they had read all or most of the Staying Connected lessons, and 30 (3.7%) shared that they read a few or none of them. In the second question, 731 (92.6%) of participants said they posted in all or most of the Staying Connected Lessons, and 58 (7.4%) indicated they had read a few or none of them or didn't know what they were. In the third question, 696 (88.2%) of participants responded "yes" when asked if the Staying Connected Lessons taught them a new way to stay connected, or motivated them to stay connected more, while 93 (11.8%) reported "no" or didn't know what the lessons were.

**RQ4 – Impact on Course Retention**

To measure the impact of the innovation on retention in PC 101 (RQ4), I compared the number of students after PC 101 Day 15 and the number of students after PC 102 Day 15 in both treatment and control groups (see Appendix B for a discussion of auto-dropping and its impact on when course counts are taken). Overall, the percent of students retained was nearly identical, with the treatment group showing 0.4% more retention than the control group.

**Table 18**

*PC 101 Students Retained into PC 102*

	PC 101	PC 102	% Retained
Treatment	5,808	4,008	.690
Control	5,856	4,015	.686

A Pearson chi-squared test was appropriate to use to compare retention between the groups because the retention data was dichotomous (they were retained or not), as

opposed to continuous. The test revealed the relationship between group membership and being retained was not significant:  $X^2(1, N = 11,664) = 0.27, p = .603$ . This indicates that even though the treatment group showed a slight gain in retention (.004), these numbers were not statistically different. Therefore, I was not able to see evidence that the innovation improved retention.

### **RQ3 – Impact of Know-Hows: Qualitative results**

In the following section, I will discuss how I prepared the data from the three open-ended questions that were at the end of the post-innovation survey. The questions included the following:

1. Please describe how you used the lessons called “Staying Connected” to stay connected to this online course?
2. How did you modify or adjust the strategies in these lessons to work for you?
3. What strategies have you used to stay connected that were not in the lessons called “Staying Connected?”

I will then discuss how I analyzed the qualitative responses, and how I used artificial intelligence (AI) as an unbiased partner to analyze the qualitative data.

#### ***Data Clean-Up***

Only the students in the treatment group were asked the open-ended questions, which were part of the post-innovation survey. For this analysis, I used data from students who reported reading all, most, or a few of the Staying Connected lessons. This constituted 786 (99.7%) students. Since the students’ responses to questions 4 and 5 were similar in nature, it was determined that those two questions were not distinctly unique.

Consequently, the responses to those two questions were combined before completing the coding process.

### *Analysis and Findings with AI as a Partner*

I randomly sampled 100 responses from Question 4 and 5. Eight students from the sample took the survey twice. Since the responses in both of their attempts were unique, they were both considered in the analysis of the dataset. I then performed a content analysis of the responses whereby I assigned a code to each one using a constant comparative approach. According to Julien (2008), content analysis involves sorting through content, in this case written student responses, and applying a code to each response. I gave each response an initial open code, which consisted of a word or a short phrase that captured the essence of the response. Next, I sorted the codes into four major themes through axial coding: community, inspiration, motivation, and application. To verify the coding of the analysis of the 100 students could be extended to the full dataset of 1,783 responses, I partnered with an artificial intelligence service called Perplexity (found at <https://perplexity.ai>) in analyzing the full dataset. Hereafter, I will refer to this AI tool as “AI.” This task involved evaluating AI’s ability to analyze the same 100 student sample and comparing AI’s themes with my themes. AI determined my four themes were appropriate with a few exceptions, but the exceptions did not go outside of the range represented in my four original themes. The result of partnering with AI is shown in Table 19.

**Table 19***Comparisons of Themes of Manual and AI Analysis to Questions 4, 5*

Manual	AI
<ul style="list-style-type: none"> <li>• Community</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Community and Connection</b></li> <li>• <b>Gratitude and Perspective</b></li> </ul>
<ul style="list-style-type: none"> <li>• <b>Inspiration</b></li> <li>• <b>Motivation</b></li> </ul>	<ul style="list-style-type: none"> <li>• Motivation and Inspiration</li> </ul>
<ul style="list-style-type: none"> <li>• Application</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Problem-Solving and Adaptation</b></li> </ul>

*Note.* The bold items indicate the final themes used in this study.

In further review of the data, I determined sub themes to depict the richness and variety of student experiences and impressions. Table 20 shows the mapping of the themes to subthemes.

**Table 20***Themes and their Sub Themes from Question 4*

Theme	Sub Themes
Community and Connection	Identification Emulation
Gratitude and Perspective	Gratitude No Excuse
Inspiration	Faith Illumination
Motivation	Focus Perseverance
Problem-Solving and Adaptation	Get Help Improve Internet Time Management

Descriptions of each theme are below.

**Community and Connection.** Students felt a measure of comfort, strength, and courage knowing that others were struggling in similar ways. This included struggling to maintain an internet connection and having working devices to access online coursework. Through this identification, they felt validated and found energy to re-engage and fight to stay connected. The lessons helped students not feel alone in their struggles, and for many, they played a crucial role in keeping them engaged and connected with the material. One student noted:

The discussion following the story allowed me to reflect on similar challenges I faced and provided a platform to exchange strategies with fellow learners. This sense of community helped me feel supported and understood, reinforcing my commitment to the course

**Gratitude and Perspective.** Students realized that their own technology circumstances were better than those in the stories and discussions, and they were grateful. One student shared, “These stories gave me perspective, and made me grateful that my ‘staying connected’ struggles are miniscule. I became more proactive and appreciative of my blessings and resources.” In addition, students felt they had no excuse to give up on the course since their ability to connect to it was much better than that of those in the stories and discussions. There was a measure of obligation to stay the course since they rarely struggled to stay connected. Even when connection or other challenges arose, they felt more than adequately equipped to overcome them compared to those

students from the stories. One student was simply motivated “to look for ways to solve issues instead of making excuses.”

**Inspiration.** Students tapped into spiritual power to keep them connected to the online coursework, including prayer, meditation, scripture study, and trust in divine assistance. Most students were members of the Church of Jesus Christ of Latter-day Saints, and this provided a common frame of reference and method for the petition and reception of heavenly help. Students commented on receiving grace from the Lord to assist their best efforts to stay connected. This included divine direction when they needed to make decisions. They loved the scriptures shared in the lessons and found them inspiring. One student commented, “I love how they asked for God’s help. It shows their faith and humility. I asked [for] help from my parents and grandparents, and I also asked for God’s help. God helped me in many many ways! He blessed me with strength and perseverance.”

Many also found renewed inner strength to keep going after seeing the examples of fortitude in the stories and discussions. They felt a mental switch turn on as they perceived the task ahead as doable, even if difficult. One student said, “I had only one option which was to succeed against all odds after reading [the stories] shared on the discussion called staying connected.”

**Motivation.** Being motivated to persevere was the largest construct evident in the data. To persevere, students mentioned the need to have a positive or growth mindset, and the lessons helped them see examples of successfully using a growth mindset to stay the course over time. Students felt empowered to work through the obstacles in their



lives, even ones they didn't yet know about. The data showed a renewed focus and tenacity in students to make it work anyway, and these comments brimmed with hope and resolve. One student shared, "I used the stories to build my own courage, motivation, my why, and Perseverance to stay in the struggle without giving up," while another noted, "Even when I feel like [giving] up because I don't have full [access] to [the] internet and technology[,], I never allow that to be a reason for me to give up. I have all my scripture as a source of motivation for me. I know that I can do it since others [do] it and they succeed."

**Problem-Solving and Adaptation.** Respondents directly used one or more of the strategies taught in the lessons to continue their connection to the online coursework. This included improving their internet access, getting help, reducing distractions, and managing time.

Students found ways to access an internet connection that was more stable and cheaper, even if it meant traveling away from home or working at night. In many cases, they realized that they had options for better and cheaper internet, they just hadn't thought enough about it until now: "I learnt that the internet is faster at night and buying data in bulk is cheaper. This solution from sisters and brothers around the world helped me alot."

Many reached out to others for assistance. This included instructors, friends, and Church members and involved accessing the internet, borrowing devices, and answering course-related questions. One student noted, "I even struggle because I don't [own] a laptop but only a mobile phone which is slow. I try to overcome it by borrowing devices

in order to keep up with my course works. Thankfully I finally make it to the last week of PC 101.”

An important element of success was eliminating distractions. Students commented on the need for self-discipline to avoid distractions, like reducing time on social media so they could study. Some found places in their homes to designate as study spots, while others had to find ways to reduce distractions when they studied away from home. For many, planning ahead was key to making this happen.

Finally, students organized their schedules so they could maximize the time they had to connect to the coursework and complete it on time. This included working around family schedules, completing work farther in advance, sticking to deadlines they set for themselves, and tying their goals to time management.

As a student in Pathway Connect, I found the 'Staying Connected' stories and discussions to be an invaluable part of my learning journey. These stories allowed me to relate to the course material on a personal level. For instance, one of the stories shared by a fellow student discussed their challenges in balancing coursework with a full-time job and family responsibilities. Reading this story reassured me that I wasn't alone in facing these challenges, and it provided practical tips on time management and maintaining a healthy work-life-study balance. Recognizing that I had a busy schedule, I decided to allocate specific time slots each week for reading stories and participating in discussions. This allowed me to balance my coursework with work and family responsibilities effectively.”

### ***Additional Know-Hows***

Question 6 read, “What strategies have you used to stay connected that were not in the lessons called ‘Staying Connected?’” I searched through the 100-student sample for different strategies used by students. The following 10 strategies emerged as novel approaches to staying connected.

**Accountability Partner.** Find someone you know and trust to hold you accountable for getting your work done. “I have an accountability partner that isn't a family member.”

**Classmate Community.** Make an effort to reach out and connect with your peers in the course through electronic means available in Canvas and other platforms. “I think a method that has helped me and my fellow classmates was creating a WhatsApp group chat where together we are able to express our opinions and share notes and knowledge.”

**Family Awareness and Support.** Make your family aware that you are a student and that you have corresponding demands on your time and energy. Ask them to support you. “I created a schedule and informed my family so that they could help me achieve my goal and ensure I can attend classes.”

**Identify Your Weakness.** Know where your weaknesses are so you can work on minimizing or eliminating them. “Identifying my weakness during the course and working so hard to put them behind and excell.”

**Meditation.** Spend time meditating so you can keep your emotions constructive and your outlook optimistic. “I used different forms of meditation and taking time to calm down so I could think clearly and not be filled with stress.”

**Mobile App Use.** Utilize the Canvas mobile app to study without a computer.  
“Utilizing Canvas app to study anywhere, everywhere and on the go”

**Note Taking on Paper.** When offline, you can still study if you have taken notes on paper. “I think everything has been discussed, but taking lots of notes on a notebook gave me confidence that even if the internet went off I could still work on my assignment and transport my work once the power or internet came back.”

**Outreach.** Reach out to others to offer help. “reaching out to class mates as i complete tasks and encourage them to complete them too”

**Pacing Guide.** Make a schedule for yourself so you can properly balance school and other life demands. “I felt like that what I most used during this course is trying to follow the pacing guide that I had created in the beginning that helped me a lot with managing my time and what to do.”

**Work Offline.** Download work so you can complete it even without an active internet connection. “In terms of doing my assignment, I sometimes do my assignment off line, so what I do is that I save the assignment sample and the questions on my phone document, then do the assignment off line so immediately I have access to network I just submit, and it has help me many times.”

**Rewards.** Give yourself rewards for accomplishing tasks relating to the coursework. “I gave myself rewards for completing things, instant rewards and also kept the future rewards in mind.”

## Summary

This chapter reviewed the findings of Phase 2 of the study. The pre- and post-innovation survey measured how and to what extent participating in the Staying Connected lessons changed students' use of strategies that helped them persist (RQ3), and my analysis of its quantitative data across the treatment and control groups showed no practical or statistically significant gain in scores in either group. In addition, quantitative analysis of PC 101 retention data showed no difference in retention between treatment and control groups (RQ4). However, descriptive statistics did show high reported use of, and help gained from the Staying Connected lessons. Open-ended questions from the surveys explored the adaptation (RQ3) of the know-hows, and I discovered five themes: (a) community and connection, (b) gratitude and perspective, (c) inspiration, (d) motivation, (e) problem-solving and adaptation. In addition, participants shared 10 novel strategies they used to stay connected.

## CHAPTER 5

### DISCUSSION

In this chapter, I will discuss several outcomes that were generated from the findings of this study, noting the complementarity of the supporting qualitative and quantitative data. Connections to the literature and current research, and implications for BYU-Pathway will be highlighted. I will follow with an explanation of the limitations and generalizability of the study, the growth I experienced through action research, and the next steps for my practice as a researcher-practitioner.

#### **The Design of the Innovation**

Once the know-how strategies were determined for this innovation, I led the design team, which included me, the program designer, the instruction manager, the peer mentor manager, and the SMEs, in determining a way to efficiently convey the know-hows of six SMEs to over 700 students who were in the treatment group of this study. Through the design meetings that I facilitated, we determined that the personal messages of the SMEs and their photo would be added to PC 101 as Staying Connected lessons, which would include an invitation for PC 101 students to discuss the suggestions that were the message of the Staying Connected lessons. The design team decided to standardize the organization of the content and titles of the headers within each of the six lessons. They also decided to allow students to interact with each other by providing the opportunity to post to threaded discussions with standardized prompts. Lastly, to prompt students to view the Staying Connected lessons as essential, they decided to add

completing the lessons to the Canvas to-do list. What resulted was a simple, low-tech, no-cost innovation to a technological issue.

760 students (96.4%) in the treatment group reported that they read all or most of these lessons, and 731 (92%) said they posted a response in all or most of them, an impressive engagement rate. The qualitative data corroborated the quantitative data that showed a high level of student engagement of engagement with the lessons, as students repeatedly shared that the Staying Connected lessons were inspiring and motivating. Many PC 101 students identified closely with the SMEs' connection woes. Furthermore, although not an intention of the innovation, some PC 101 students who had better internet and devices than the SMEs involved in the study expressed gratitude about their technology affordance. Altogether, students found renewed energy to steadily engage with their coursework because of experience with the Saying Connected lessons.

Kranzberg reminds us that with new technology advances, additional innovation must follow to support it (1986). The work of the design team produced such an advancement. The Staying Connected Lessons helped students engage with their online coursework where the digital divide (Morissett, 1995) made access to online higher education programs challenging (Saavedra, 2021). Adding the Staying Connected lessons to PC 101 was an effort to boost equity in access and fulfill an ethical responsibility that required using technology in the service of social justice (Dyson, 1999; Rotar, 2022; Simpson, 2008; Tate & Warschauer, 2022; United Nations, 2022, Yang, et al., 2022).

From an organizational perspective, since the innovation was relatively simple to create, BYU-PW considered the Staying Connected lessons a low-risk investment with

high potential to increase student retention. Furthermore, because the design team shared the responsibility of creating the innovation, they developed a deep understanding of its purpose and value. They also understood what it would take to sustain the innovation should it become a stable part of PC 101. In the final stage of Hill's team leadership model, the leader assesses team effectiveness, looking for evidence of performance and development (2016). My team's focused work and resulting commitment to the innovation indicated to me that the team had developed further into a cohesive and productive unit, one that values continual improvement and expanding our global reach.

### **Peer Mentors and Self-Regulation**

Peer Mentors are advanced students who have demonstrated success in their online coursework and have been hired by BYU-Pathway Worldwide to support other students. In review of the findings related to the peer mentors' messages for staying connected, it was evident that their creative methods to staying connected were exhibitions of self-regulation. Qualitative data from the questionnaire and interviews showed that when peer mentors had barriers to engaging in their coursework, they adopted strategies such as finding good internet, borrowing devices, and finding ways to work around power outages. Their plans and successes were rooted in a deep commitment to their education. By focusing on their "why," they made sure their commitment to their education was self-sustaining. Pintrich's four phases of SRL, forethought, planning, and activation; monitoring; control; and reaction and reflection (2000), can be useful in explaining the Peer Mentors' tenacity.



When prompted, the peer mentors thought about the context in which they had to complete learning tasks and made plans using knowledge from their prior experiences. In doing so, they exhibited the first phase of Pintrich's model, forethought, planning, and activation, which is defined as "planning and goal setting as well as activation of perceptions and knowledge of the task and context and the self in relationship to the task" (2000, p. 455). To plan and set goals for their learning tasks, peer mentors activated their perceptions of the online learning platform and what they needed to do to get and stay connected to it. They perceived that they lived in places where power and internet service were volatile and expensive. They perceived that their devices were older or inadequate to access the internet and complete the online coursework. They then made plans and contingency plans to get and stay connected to the online coursework. One peer mentor, who lived far away from an urban center, made plans to have a second cellular network at the ready when the first one went out. Other peer mentors planned their weekly schedules so they could take advantage of free internet access at local church meetinghouses or borrow computer time from friends or work colleagues.

Pintrich describes the monitoring phase as "various monitoring processes that represent metacognitive awareness of different aspects of the self or task and context" (2000, p. 455). In this dissertation study, peer mentors monitored themselves in relation to the learning task and their learning context. They were on high alert for power or internet outages, watched the battery life of their smartphones or laptops, and continually monitored the amount of data they were using since they paid by the megabyte. Monitoring was a key behavior that helped Peer Mentors build an understanding of

internet, power, and device reliability. Pintrich's SRL framework focuses on monitoring learning tasks in a classroom-based learning environment (2000); however, the peer mentor data in the present study illustrated a kind of monitoring that was necessary to keep students inside a virtual learning environment. In Pintrich's model, students are already in a classroom (2000), while the peer mentors in this study had to work to get and stay there. Cho and Shen (2013) found that when students combined monitoring and control with time on task, they had better grades. This finding is in line with the peer mentors in this study who demonstrated this when they monitored their data costs and available computer time and made adjustments to stay connected, taking the time necessary to make it happen.

The control phase involves students' "efforts to control and regulate different aspects of the self or task and context" (Pintrich, 2000, p. 455). Peer mentors in the present study took actions to address changes in their technology context that would have kept them from completing learning tasks. Wang et al., (2013) saw increased technology self-efficacy with students who motivated themselves in the monitoring and control phases. Such self-efficacy was related to higher course satisfaction and better grades. This aligns with data from the present study that shows peer mentors repeatedly demonstrated technology self-efficacy as they navigated issues related to electricity, internet data, and device health. They switched from one cellular provider to another, activated in-home solar power systems, traveled to church meetinghouses for free internet, and borrowed computer time at work or with friends. Many worked into the night because that was when data was cheaper or when they could borrow time on a

laptop. Tate and Warschauer said that the human resources necessary for successful online learning are the students themselves, using strategies to stay connected and succeed with online coursework (2022). The peer mentors in this study connected and stayed connected to the online coursework as well-practiced human resources.

In Pintrich's (2000) final phase, reaction and reflection, students evaluate their efforts to complete learning tasks, which includes an evaluation of the context in which they complete these tasks. According to Pintrich, students in this phase attribute their success or failure to complete learning tasks to internal or external factors such as their own lack of effort or that the learning task is too difficult (2000). This is in line with what was seen among the peer mentors in this study. They made similar attributions, citing things out of their control like power or internet outages as keeping them from completing learning tasks on time. However, they also attributed their successes to their own creative efforts to work around outages. As they evaluated these efforts, they often adjusted their plans to stay connected to the online coursework. Some had to sacrifice things they cared about over lengthy periods of time to stay connected. One peer mentor said he cried in frustration because he was losing sleep to complete work on a borrowed laptop, but he was determined to persevere. Another reflected, "It's something that I was willing to work towards to end -- to do whatever. I say, 'I would let go of certain things. I want to invest in this. I'll let go of this, and I'm going to invest in my education.' And it's already beginning to pay off, and I'm grateful." These sentiments were echoed throughout the data. These students felt strongly that their efforts to stay connected were worth it. Both Fung et al. (2019) and Manganello et al. (2019) found that self-reflection was a key

indicator of SRL strategy use in online students, but they did not test its impact on student achievement. The data from peer mentors in the present study show that, as successful students, they employed self-reflection as a way of energizing themselves to keep going.

### **PC 101 Students' Responses to the Innovation**

The data suggest that PC 101 students desired to stay connected despite technical hurdles, and that they exhibited a process of becoming that Lee et al. (2019) noted when the students in their study had a sense of belonging in their online programs and had discovered ways to find continued academic success. Themes from PC 101 student data show a similar process of becoming, one that relied on their motivation to stay connected. As part of their engagement with the Staying Connected lessons, PC 101 students engaged frequently in the discussion boards where they learned to adapt and apply self-regulated learning strategies. This was a demonstration of co-regulation, where students acquired self-regulation by learning from knowledgeable others over time. This was much like findings by Sadaf et al. (2022) that demonstrated students had benefited from co-regulation more when they became active participants in their online coursework. Studies have shown that building in opportunities for students to develop co-regulation into online coursework can boost their metacognition, an important SRL strategy in the forethought, planning, and activation phase (Sadaf et al., 2022; Vaughan et al., 2020). The findings from this study are supported by the work of these scholars as PC 101 students reported high engagement with the Staying Connected Lessons and revealed that

their interaction with the lessons evoked introspection on how their situations compared to those of the peer mentors.

PC 101 students reported an internal locus of control as they considered strategies for staying connected. Lee et al., reported that among non-traditional adult online higher education students, possessing an internal locus of control was linked to higher persistence in online education programs (2013). However, PC 101 students in the control group persisted as much as students in the treatment group. These data indicate that while the innovation was impactful on the treatment group, and while it enjoyed high engagement among them, it was not associated with higher retention. Therefore, we need to find other ways to utilize these know-hows to boost retention.

### **Strengths and Limitations of the Study**

One of the strengths of this study is that it was contextualized for a very specific learning environment. The rich descriptions of the online course, the students, and those who support the learning experience may help educators in similar settings determine how closely their situations align with that of this study (Ivankova, 2015). To strengthen the generalizability of this study, I triangulated multiple forms of data to strengthen the study's findings. Additionally, I worked closely with a critical friend, who had no direct contact with the participants in the study; yet, because they were familiar with BYU-PW programs, they were able to engage in review of the innovation and serve as an excellent advisor and mentor. Working with my critical friend from an outside-in perspective assured that I reviewed the data from a distant perspective, which was a check against my potential bias (Henriksen, et al., 2021, Ivankova, 2015).

This study had some limitations which should be noted. First, the limited number of SMEs may have reduced the reliability of the Staying Connected Lessons for all PC 101 students equally. Another limitation is that the innovation was visible to students after they were already connected to their course, so the innovation was not helpful to any of the BYU-PW students who were unable to connect to their course at all. Lastly, because I was unable to positively identify participants, I was not able to correlate their responses to the study instruments with their final grade in PC 101. These limitations could be addressed in future efforts to improve student attrition.

### **Next Steps for Addressing Student Persistence at BYU-PW**

As noted above, a limitation of this study was that the innovation was delivered to students who had already managed to get and stay connected to the online coursework. In the final reflection meeting, the design team asked if the innovation was put in the best place along the student journey. The PathwayConnect program council is considering two avenues of further research to answer this question. First, moving the innovation to a pre-PC 101 experience and delivering it in a simpler way might help students before they experience too many connection challenges. Delivery ideas include paper or digital handouts, an orientation Canvas course that requires no sign-in, and a series of web articles. Other researchers have shown that such orientation materials are instrumental in subsequent student success with online coursework (Abdous, 2019; Nketsia et al., 2021). The second avenue of further research is to determine if students taking the course would respond just as positively to instructor-led explanations of know-hows. Stories of

successful know-how use from the peer mentors could be included with this instructor outreach to inspire and motivate students to apply the know-hows.

### **My Growth as an Action Researcher**

Action research affords the researcher-practitioner the opportunity to participate in a recursive process whereby a problem of practice is defined, relevant literature brought to bear, and careful research is conducted in the researcher-practitioner's place of work, among and with colleagues, to bring about change (Stringer, 1999). Through planning, conducting, and writing about this action research study, I grew as a researcher-practitioner in several ways, some of which support other job-related functions. As an example, I developed better skills in leading a coordinated project, involving multiple stakeholders, and facilitating the collaborative design of an innovation. I learned the power of tempering my insights by basing some decision on relevant literature and seeking the wisdom of an unbiased critical friend. I developed myself into a better leader by employing a research-based leadership model (Hill, 2016) to facilitate team approaches to solutioning, defining progress, and reviewing performance. I gained an appreciation for the relevance of formative data in shaping an innovation (Ivankova, 2015). Finally, I strengthened my ability to reflect on action, crystalize findings so I could share them with stakeholders, and invite further action toward the needed change (Ivankova, 2015; Mertler, 2014; Stringer, 1999). In fact, the reflection meeting at the end of the study turned into a series of confirmations about this work. All stakeholders were excited and eager to keep contributing to the staying connected problem.

## **Conclusion**

This dissertation study showed how online higher education students living around the world used SRL in the four phases suggested by Pintrich (2000). It also corroborated findings from SRL studies that showed SRL was present in successful online higher education students (Guo, 2022; Kizilcec, et al., 2017; Lee, et al., 2013; Lee, et al., 2017), in this case, the peer mentors. In addition, this dissertation study demonstrated an innovative way of sharing SRL strategies, or know-hows that resulted in high engagement among PC 101 students who lived around the world. Finally, while these students' persistence was unchanged, they applied the know-hows in many ways.

Further research about efforts to support online students globally could explore the extent to which specific SRL strategies are most related to student persistence and academic achievement. This study focused on teaching strategies related to students living around the world getting and staying connected to the online coursework to boost their persistence from one semester to the next. The study did not find evidence that teaching students strategies to stay connected led to better retention. There may be other SRL strategies this global student body employs that BYU-Pathway Worldwide can capture that are correlated with persistence and achievement. In a new innovation, it may be helpful to engage students who have already dropped out. From a different angle, students who have disconnected may provide BYU-Pathway Worldwide with insight about, other barriers and how we can support students through coursework content and delivery. For example, learning about the point in the term when disconnection happens and their academic performance at that time may provide helpful insights about future



solutions. In addition, correlating these datapoints with student demographic indicators such as country of residence, HDI, income levels, language spoken at home, gender, age, etc. might prove to be helpful to future course re-design work.

As a researcher practitioner dedicated to delivering online higher education, I will continue to lead innovation and change, striving to provide equitable access for students living in every corner of the world. I will visit students in these corners, understand the access barriers they face and work with them to unlock doors. My father, a schoolteacher for 36 years told me when I was young that the curriculum *is the students*. This means that educational outcomes are not measured by what students do, but by what they become. Like my father, and his father, and his father, all schoolteachers, I will continue to find ways to empower students so they may become more capable, confident, and eager to serve others with their newfound knowledge. This harmonizes with the mission of BYU-Pathway Worldwide, that students can become disciples of Jesus Christ who are leaders in their homes, the church, and their communities (BYU-Pathway Worldwide, 2021). I will find ways to provide access for students living around the world so that, through education, they may nurture their talents to bless the lives of families and nations for generations to come.

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APPENDIX A  
PATHWAYCONNECT CURRICULUM

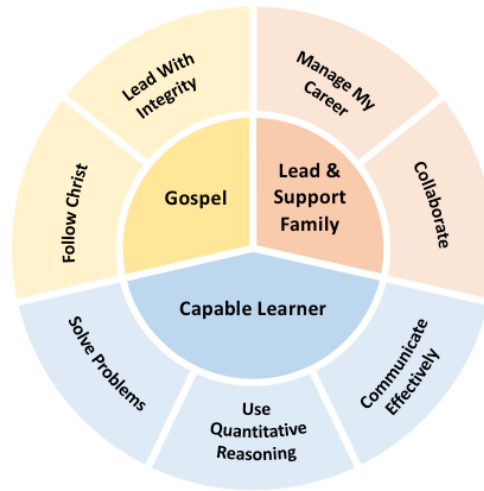
## **PathwayConnect Program Outcomes and Skills**

PathwayConnect is a higher education program designed to help students gain academic and professional confidence while developing meaningful and marketable skills. Completion of PathwayConnect constitutes earned admission through BYU-Pathway Worldwide to the online certificate and degree programs from BYU-Idaho and Ensign College. Through a unique blend of online academic courses, religious education, and weekly face-to-face gatherings with other students, PathwayConnect participants achieve three program outcomes which are supported by seven key skills.

1. Help students get the gospel of Jesus Christ down into their hearts
  - **Follow Christ.** Develop discipleship by working at your own frontier. Stay humble, teachable, and build on what you learn.
  - **Lead with Integrity.** Take the initiative to lead others in kindness and love. Lead to serve; lead to teach; lead to learn.
2. Prepare students to lead and support families
  - **Manage My Career.** Develop a career path where you can serve more people by building your own capability. Be resourceful, persistent, and patient.
  - **Collaborate.** Work with individuals from diverse backgrounds to accomplish tasks and manage conflict.
3. Help students become capable learners
  - **Solve Problems.** Gather important information, think critically, and be creative when making decisions.



- **Use Quantitative Reasoning.** Use data to discover patterns, manage resources, and make good decisions.
- **Communicate Effectively.** Receive and convey information successfully in personal and professional situations. Write and speak to be clearly understood.



### **PathwayConnect Courses**

Each course helps students achieve the program outcomes as their capability expands in personal, professional, and academic settings. All courses have been written at a strategic language level to make the readings accessible to a global English-speaking audience as well as English Language Learners (ELLs) at the intermediate high level. Key vocabulary is provided as well as optional listening and speaking practice.

#### ***PC 101: Life Skills***

In this course, learners discern their pathway in life and strengthen their ability to pursue it. Their pathway is a road that they construct based on an understanding of their

stewardships, their aspirations, strengths, and talents. It is based on an understanding of the challenges and constraints that they need to endure, reframe, or overcome. Activities invite students to learn about and practice educational stewardship, learning by faith, time management, financial management, avoiding thinking errors, and talent development. Students use communication, quantitative, problem solving, and other important skills to inform and strengthen their work. See Table A1 for a list of PC 101 outcomes. See Table A2 for a list of what students produce each week in PC 101.

**Table A1**

*PC 101 Outcomes by Subject Area*

Area	Outcome
Life Skills	The student identifies learning strategies for personal improvement
Life Skills	The student prioritizes their time and sets attainable goals
Life Skills	The student applies basic financial management skills to their personal budget
Life Skills	The student applies strategies to overcome thinking errors
Life Skills	The student explores ways they can persevere
Writing	The student writes for an audience and with a purpose, at a basic college level
Writing	The student writes introductory paragraphs that contain a hook and thesis statement
Writing	The student writes body paragraphs that contain a single controlling idea and supporting details
Writing	The student writes concluding paragraphs that revisit themes of the essay and provide closure
Writing	The student writes multi-paragraph essays, at a basic college level
Math	The student performs basic arithmetic with whole numbers
Math	The student performs basic arithmetic with decimals and percentages
Math	The student performs basic arithmetic with fractions
Math	The student simplifies expressions with a single variable
Math	The student solves equations for a single variable
Math	The student enters data, creates charts and interprets data in Excel

**Table A2***PC 101 Weekly Lesson Topics*

Week	What Students Produce
Week 1: Getting Started	Students complete important preparation steps to be successful in the online curriculum.
Week 02: Learning How to Learn	Students write a clear, focused basic paragraph on a learning strategy that will help them as Pathway students
Week 03: Time Management and Goals	Students break down higher level goals into lower- level goals as well as using math and Excel to solve a problem.
Week 4: Thinking Errors	Students write a clear, focused, basic essay on something they can do to overcome a specific thinking error.
Week 5: Financial Stewardship	Students review and apply the specific financial principles of budgeting and self-reliance
Week 6: Perseverance	Students write a clear, focused, informative essay on two things that will help them have more perseverance
Week 7: Deep Learning	Students commit to continue using and developing some of the life skills they practiced during the course.

***PC 102: Professional Skills***

This course invites learners to use their personal strengths and abilities to serve others. Learners engage in authentic learning activities that add value to their homes, workplaces, or communities as they learn to serve and serve to learn. Activities invite

students to chart their professional and scholastic path, communicate in professional situations, strengthen relationships, collaborate, manage conflict, and lead from anywhere through influence. See Table A3 for a list of PC 102 outcomes. See Table A4 for a list of what students produce each week in PC 102.

**Table A3**

*PC 102 Outcomes by Subject Area*

Area	Outcome
Professional Skills	The student applies career management skills that can lead to improved employment
Professional Skills	The student communicates effectively using oral communication skills in a professional setting
Professional Skills	The student works effectively in teams
Professional Skills	The student demonstrates critical thinking skills in making decisions
Professional Skills	The student customizes and formats a resume for an audience and with a purpose.
Writing	The student customizes and formats a resume for an audience and with a purpose.
Writing	The student writes a professional request and reply email for an audience and with a purpose.
Math	The student determines the perimeter, area, and volume of basic geometric shapes
Math	The student performs unit conversions
Math	The student applies graphs to draw conclusions
Math	The student utilizes lines in slope-intercept form
Math	The student calculates interest using functions in Excel

**Table A4***PC 102 Weekly Lesson Topics*

Week	What Students Produce
Week 1: Disciple Leadership	Students find a job posting for a job they are qualified for in preparation for building a resume.
Week 02: Career Management	Students complete a clear and focused resume using their job posting.
Week 03: Networking and Interviewing	Students complete a spreadsheet to calculate potential earnings with a degree and engage in a networking activity.
Week 4: Relationships and Teamwork	In groups, students form a mock business that sells a drink. They complete a Team Governance document.
Week 5: Interpreting Data and Making Decisions	Students work with their group to complete a Break-Even Analysis and individually complete a self-reflection on their teamwork.
Week 6: Professional Communication	Students submit a request and reply email and work with their group to create a slide presentation that completes their mock business activity.
Week 7: Disciple Leadership	Students write a letter to future PC 102 students offering advice and encouragement.

***PC 103: University Skills***

This one-credit course invites learners to discover and strengthen the skills they need for continued success as an online student. Activities invite students to practice important university success skills, online tool sets, and asynchronous collaboration. Students also receive guidance and support as they apply for admission through BYU-Pathway Worldwide and begin planning their academic path to graduation with a degree

from BYU-Idaho or Ensign College. During this semester, students are concurrently enrolled in the first course of an introductory certificate (see section below called “Certificate Courses”), and their weekly gatherings support their experiences in those courses. Above all, students learn how to balance the demands of their home and work lives with the demands of online courses. See Table A5 for a list of PC 103 outcomes. See Table A6 for a list of what students produce each week in PC 103.

**Table A5**

*PC 103 Outcomes by Subject Area*

Area	Outcome
University Skills	The student employs skills that can lead to a productive online student experience
University Skills	The student demonstrates an understanding of local and online resources for online student success
University Skills	The student begins the next steps of her/his educational journey
University Skills	The student creates an academic plan all the way to a potential bachelor’s degree
University Skills	The student indicates how s/he will persist in her/his academic plan

**Table A6***PC 103 Weekly Lesson Topics*

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Week	What Students Produce
Week 1: Academic Planning	Students begin the application to matriculate to an online degree program, and they begin planning a degree path.
Week 02: Academic and Career Stewardships	Students complete a clear and focused paragraph that explains the connection between their academic and career stewardships.
Week 03: Wellness	Students create a simple wellness plan using SMART goals.
Week 4: Study Skills	Students practice basic reading comprehension and note-taking skills.
Week 5: Information Literacy	Students complete an article evaluation using the COPE method.
Week 6: Resourcefulness and Self-Advocacy	Students create a local and online resource list and choose one resource to contact for help.
Week 7: Persistence	Students create a persistence plan that prepares them for continued success as an online student.

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***Certificate Courses***

Students take the first course of an introductory certificate while they take PC 103. These certificates and their first courses are listed in Table A7. Students select the certificate/course during PC 102.

**Table A7***Introductory Certificates and their First Courses Taken Alongside PC 103*

Certificate	Name of first course	Credits
Administrative Assistant	BUSPC 115 Business Applications	3
Basic Accounting*	BUSPC 115 Business Applications	3
Commercial Fundamentals	BUSPC 115 Business Applications	3
Community and Environmental Health	PBHPC 240 Introduction to Public Health	2
Construction Field Supervision	CONPC 221 Construction Safety	3
Entrepreneurship	BUSPC 116 Start Your Business	3
Family History Research	RELPC 261 Introduction to Family History	2
Family Relations	FAMPC 160 Family Relations	3
Hospitality and Tourism Management*	BUSPC 113 Introduction to Hospitality and Tourism	3
Medical Billing and Coding Fundamentals*	MCOPC 180 Introduction to Medical Billing and Coding	3
Project Management*	PMPC 140 Intro to Project Management	3
Social Media Marketing*	DMPC 105 Introduction to Social Media Marketing	3
Teaching English as a Foreign Language (TEFL)	TESPC 101 Introduction to TESOL	3
Technical Support Engineer*	ITPC 102 PC Hardware Technician	3
Web and Computer Programming	CSEPC 110: Programming Building Blocks	2

*Note.* All certificates are from BYU-Idaho, except those marked with an asterisk, which are Ensign College certificates.



APPENDIX B

AUTO-DROP

The term “Auto-Drop” refers to a process whereby BYU-PW examines the activity of students in PC 101, PC 102, and PC 103 to determine whether to unenroll them. Unenrolling, or “auto-dropping” non-participating students is done as a favor. These students are not likely to withdraw themselves, and unless they are unenrolled by BYU-PW, they will go on to accumulate a failing grade on their transcript as well as a tuition charge.

**Evaluation Window, Criteria, and Dates**

An “evaluation window” is a period when BYU-PW examines the activity of students to determine if they are participating or not (see Figure B1). If students do not turn in any graded quizzes or assignments during the evaluation window, irrespective of what week the assignments or quizzes were assigned or due, they are considered as non-participating and are auto-dropped. The evaluation window is between 12:01 AM MDT\* on Saturday the week before the term begins to 11:59 PM MDT\* on Monday of Week 3. On Tuesday of Week 3 of a term, non-participating students are auto-dropped. On Wednesday of Week 3 of a term, the term’s official course enrollment counts, or a census, is taken. This is the number that is used to declare how many students begin the term in each course.

**Figure B1**

*Evaluation Window*



APPENDIX C  
RECRUITMENT AND CONSENT MATERIALS

## **Peer Mentor Recruitment and Consent Email**

Dear Peer Mentor:

My name is James Findlay, and I am the curriculum manager for PathwayConnect at BYU-Pathway Worldwide. I am also a doctoral student in the Mary Lou Fulton Teachers College at Arizona State University. I am working under the direction of Dr. Teresa Foulger, a faculty member in MLFTC. We are conducting a research study about how students who have technology barriers have stayed engaged with their online coursework despite technology barriers. We are also investigating how and to what extent PC 101 students do not drop out of the course after they learn about some of the strategies shared by the Peer Mentors who are selected to participate in this study.

Criteria for participation in this study require that you:

- are a peer mentor,
- have struggled at times to stay connected to the online coursework due to technology barriers such as losing access to the internet, having a device break down or be stolen, running out of time for information on the internet to load, or running out of data, and
- are interested in helping other PC 101 students who have similar connectivity issues by sharing your experience overcoming them.

We are looking for four to six peer mentors who are willing to work with us to share their experience in writing in the PC 101 Life Skills course during September-October 2023. In the online questionnaire linked below, we will ask about your experience. We will then ask if you are willing to let us share your experience in the PC 101 curriculum.

We will also ask if you are willing to sit for a short recorded video interview on Zoom with James Findlay and participate in two meetings later. In the first meeting, you would help us design a way to share your experience in the course. The first meeting would be with James Findlay as well as three other BYU-Pathway administrators. In the second meeting, you would meet with the same people and help us reflect on the study's results after we share it in PC 101. Your contribution of time would be 10-15 minutes for the questionnaire, 15 minutes for the interview, and one hour for each meeting, for a total of about two and a half hours.

In the questionnaire, we will ask for your email address so we can reach out to you if you are willing to share your experience. We will also ask for your first name and the name of your country. If you are selected as a Peer Mentor Participant in this study, we would share your first name and the name of your country alongside your experience in the PC 101 course. Sharing your name and the name of your country can help your experience be more relatable to PC 101 students. During the first meeting, we will request to use a photo of you to place alongside your experience in the PC 101 course. The benefit to participation is the opportunity for you to share your experience to new PC 101 students, which may help some of them stay engaged in the course and not give up. It also gives you the opportunity to reflect on your own strategies for doing this as an online student, which can help you continue your academic path.

Your experience will not be shared with PC 101 students unless you provide consent. The interview recordings will only be viewed by James Findlay as part of the design process to prepare your experience to share with PC 101 students. The recordings

will not be shared with anyone else. The interview will not be recorded without your permission. Please let me know if you do not want the interview to be recorded; you also can change your mind after the interview starts. I will ask for your oral consent at the time of the interview. The meetings will not be recorded.

The results of the study, including selected details of your participation, will be published in a dissertation as well as potential future articles and presentations to public audiences. In these publications, we will change your name to protect your identity, and we will not use your photo.

Your participation in this study, as described above, is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. Choosing not to participate in the study does not affect your standing as a Peer Mentor. You must be 18 or older to participate in the study. If you proceed to the questionnaire linked below, you consent for Arizona State University to use any information you share in the questionnaire, potential interview, and potential meetings as described above. If you have any questions concerning the research study, please contact the research team – James Findlay at [email removed] or 1-801-710-2228 or Dr. Teresa Foulger at [email removed].

Thank you,

James Findlay, Curriculum Manager at BYU-Pathway Worldwide and Doctoral Student

Dr. Teresa Foulger, Professor, Arizona State University

If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact [email removed], or the Chair of Human Subjects Institutional Review Board through the ASU Office of Research Integrity and Assurance at [phone number removed].

### **BYU-Pathway Worldwide Administrator Recruitment and Consent Email**

Dear Colleague,

I am a doctoral student in the Mary Lou Fulton Teachers College at Arizona State University. I am working under the direction of Dr. Teresa Foulger, a faculty member in MLFTC. We are conducting a research study on how students have stayed connected to their online coursework despite technology barriers. We are also investigating how and to what extent sharing these strategies, which we are calling “know-hows,” with PC 101 students helps them persist in the course.

We are asking for your help, which will involve you attending a few meetings. Most of the meetings will be design meetings. The final meeting will be a reflection meeting at the conclusion of the study.

In the design meetings, you will consult with me to design some curriculum content and write some survey questions. The curriculum content will teach the know-hows and be placed in PC 101 that intend to inspire students to stay engaged with their online coursework even in the face of technology barriers. Until we determine a better name, we will refer to this curriculum content as the “communique.” We will use know-hows from former students in the communique. These students are currently peer mentors whom I will select to be subject matter experts (SMEs) in advance of the design

meetings. These SMEs will attend one of the design meetings to help us in the design process. Your involvement in the design of the communicate is to help shape it so it is as highly transferable to PC 101 students as possible. A final task in the design meetings is for you to write several survey questions for PC 101 students to take in Fall 2023 before and after they view the communicate. The survey questions will help us answer this question: to what extent does teaching students know-hows impact their level of effort to apply the know-hows?

In the reflection meeting, we will examine together how and the extent to which the study's research questions were answered and determine what next steps we can take in the curriculum to work on retaining students. Following the meeting, I will share the results of this study with BYU-PW key stakeholders. The report will include a summary of the innovation and its purpose, the methods, the findings, and the future implications for BYU-PW stakeholders to consider. In the report, I will note the impressions shared by you in the reflection meeting.

The table below summarizes each meeting and includes who will attend.



Mtg.	Who will Attend	Outcome
1	James, Abish	Organize SME experiences by how they represent Pintrich's (2000) four strategies of SRL in the context area
2	James, Abish, Jane, SMEs	Elicit SME feedback on the communicate's initial design
3	James, Jane, Samantha	Elicit feedback from Jane and Samantha on communicate design; clarify how their downlines will use the communicate
4	James, Abish	Incorporate feedback from prior meetings into the communicate to represent Pintrich's (2000) four context area strategies of SRL; write pre- and post-innovation survey questions to place alongside of Pintrich's (1991) time and study environment questions
5	James, Abish, Jane	Elicit feedback on the communicate; use the <i>face validity</i> (Pelz, n.d.) technique to validate the pre- and post-innovation survey questions we have written
Reflection	James, Abish, Jane, Samantha, SMEs	Examine how and the extent to which the study's research questions were answered; determine what next steps the PathwayConnect Program Council should take to work on retaining students

The results of the study, including selected details of your participation, will be published in a dissertation as well as potential future articles and presentations to public audiences. In the dissertation and any future public articles or presentations, your name will be changed to protect your identity. For internal reports to BYU-PW, your name will be included.

Your participation in this study, as described above, is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. Please respond to this email letting us know if you are willing to participate. If you have any questions concerning the research study, please contact the research team – James Findlay at [email removed] or 1-801-710-2228 or Dr. Teresa Foulger at [email removed].

Thank you,

James Findlay, Curriculum Manager at BYU-Pathway Worldwide and Doctoral Student  
Dr. Teresa Foulger, Professor, Arizona State University

If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact [email removed], or the Chair of Human Subjects Institutional Review Board through the ASU Office of Research Integrity and Assurance at [phone number removed].

### **Critical Friend Recruitment and Consent Email**

Dear Colleague,

I am a doctoral student in the Mary Lou Fulton Teachers College at Arizona State University. I am working under the direction of Dr. Teresa Foulger, a faculty member in MLFTC. We are conducting a research study on how students have stayed engaged with their online coursework despite technology barriers. We are also investigating how and to what extent sharing these strategies, which we are calling “know-hows,” with PC 101 students helps them to not drop out of the course.

We are asking for your help, which will involve you attending three meetings with James Findlay as a critical friend. The purpose of a critical friend is to provide an important outside perspective at important stages in the study to keep it true to its research questions. In the meetings, I will ask for your insights and feedback on questionnaire and survey designs, and we will discuss small adjustments to the study's innovation process going forward. In the meetings, James Findlay will take notes and use the information you provide as a way to shape (a) a questionnaire that will be sent to BYU-Pathway worldwide peer mentors, (b) one or more pieces of curriculum that will be placed in PC 101 this Fall, (c) survey questions that will be taken by PC 101 students this Fall.

The results of the study, including selected details of your participation, will be published in a dissertation as well as potential future articles and presentations to public audiences. In the dissertation and any future public articles or presentations, your name will be changed to protect your identity. For internal reports to BYU-PW, your name will be included.

Your participation in this study, as described above, is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. Please respond to this email letting us know if you are willing to participate. If you have any questions concerning the research study, please contact the research team – James Findlay at [email removed] or 1-801-710-2228 or Dr. Teresa Foulger at [email removed].

Thank you,

James Findlay, Curriculum Manager at BYU-Pathway Worldwide and Doctoral Student

Dr. Teresa Foulger, Professor, Arizona State University

If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact [email removed], or the Chair of Human Subjects Institutional Review Board through the ASU Office of Research Integrity and Assurance at [phone number removed].

**PC 101 Student Recruitment and Consent Letter - Treatment Group**

Dear Student,

My name is James Findlay, and I am the curriculum manager for PathwayConnect at BYU-Pathway Worldwide. I am also a doctoral student in the Mary Lou Fulton Teachers College at Arizona State University. I am working under the direction of Dr. Teresa Foulger, a faculty member in MLFTC. We are conducting a research study on how students have stayed engaged with their online coursework despite technology barriers. We are also investigating how and to what extent sharing these strategies with PC 101 students helps them to not drop out of the course. These strategies will be shared in a series of small lessons called “Staying Connected.” In these lessons, former students will share what they did to overcome technology barriers such as losing access to the internet, having a device break down or be stolen, running out of time for information on the internet to load, or running out of data.

We are asking for your help, which will involve you doing three things:

1. Completing the short survey below
2. Engaging in the “Staying Connected” lessons in this course
3. Completing another short survey later in the course

Your participation in these three things is voluntary. If you choose not to participate or to withdraw from the surveys or lessons at any time, there will be no penalty. Choosing not to participate does not affect your standing or your grade in PC 101 at BYU-Pathway Worldwide. You must be 18 or older to participate.

The benefit to participation is the opportunity for you to reflect on what you do to stay connected to the online coursework. There are no foreseeable risks or discomforts to your participation.

In the surveys, to protect your confidentiality, I will ask you to create a unique identifier known only to you. To create this unique code, use the first three letters of your mother's first name and the last four digits of a phone number. Thus, for example, if your mother's name was Sara and your phone number was 09 700 1234, your code would be Sar 1234. The unique identifier will allow us to match your responses in both surveys when we analyze the data.

The results of the study will be published in a dissertation as well as potential future articles and presentations to public audiences. If you engage in the surveys, you consent for Arizona State University to use the information you share as described above. If you have any questions concerning the research study, please contact the research team – James Findlay at [email removed] or Dr. Teresa Foulger at [email removed].

Thank you,

James Findlay, Curriculum Manager at BYU-Pathway Worldwide and Doctoral Student

Dr. Teresa Foulger, Professor, Arizona State University

If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact [email removed], or the Chair of Human Subjects Institutional Review Board through the ASU Office of Research Integrity and Assurance at [phone number removed].

## **PC 101 Student Recruitment and Consent Letter - Control Group**

Dear Student,

My name is James Findlay, and I am the curriculum manager for PathwayConnect at BYU-Pathway Worldwide. I am also a doctoral student in the Mary Lou Fulton Teachers College at Arizona State University. I am working under the direction of Dr. Teresa Foulger, a faculty member in MLFTC. We are conducting a research study on how students have stayed engaged with their online coursework despite technology barriers.

We are asking for your help, which will involve you participating in two short surveys. One is below and is to be completed now. The other will be later in this course. Your participation in these surveys is voluntary. If you choose not to participate or to withdraw from the surveys at any time, there will be no penalty. Choosing not to participate does not affect your standing or your grade in PC 101 at BYU-Pathway Worldwide. You must be 18 or older to participate.

The benefit to participation is the opportunity for you to reflect on what you do to stay connected to the online coursework. There are no foreseeable risks or discomforts to your participation.

In the surveys, to protect your confidentiality, I will ask you to create a unique identifier known only to you. To create this unique code, use the first three letters of your mother's first name and the last four digits of a phone number. Thus, for example, if your mother's name was Sara and your phone number was 09 700 1234, your code would be

Sar 1234. The unique identifier will allow us to match your responses in both surveys when we analyze the data.

The results of the study will be published in a dissertation as well as potential future articles and presentations to public audiences. If you engage in the surveys, you consent for Arizona State University to use the information you share as described above. If you have any questions concerning the research study, please contact the research team – James Findlay at [email removed] or Dr. Teresa Foulger at [email removed].

Thank you,

James Findlay, Curriculum Manager at BYU-Pathway Worldwide and Doctoral Student  
Dr. Teresa Foulger, Professor, Arizona State University

If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact [email removed], or the Chair of Human Subjects Institutional Review Board through the ASU Office of Research Integrity and Assurance at [phone number removed].



APPENDIX D

PEER MENTOR QUESTIONNAIRE

## **Staying Connected When It is Hard**

You have been selected to complete this questionnaire because as a peer mentor, you have demonstrated an ability to persist as an online student. It is possible that there were times when you struggled to stay connected to your online coursework because of internet or other technology issues. This questionnaire is intended to find out if you have struggled in this way and how you might have overcome those struggles to persist as an online student.

Participation in this questionnaire is voluntary. By proceeding, you provide consent for Arizona State University to use any information you share according to the parameters stated on the email that contained a link to this questionnaire. You may stop taking this questionnaire at any time.

### ***Part 1***

1. Have you ever struggled, even briefly, to complete your online coursework because of problems staying connected to the online coursework? Examples of these problems include losing access to the internet, having a device break down or be stolen, running out of time for information on the internet to load, or running out of data.
  - a. Yes [directed to question 2]
  - b. No [directed to the end of the questionnaire - no]
  - c. I don't know [directed to the end of the questionnaire]
  
2. As you think back on the times when you struggled to connect to the online coursework, were you able to take measures to overcome the issue?

- a. Yes [directed to Part 2]
- b. No [directed to the end of the questionnaire - no]
- c. I don't know, or I don't remember [directed to the end of the questionnaire - no]

***Part 2***

Answer these questions with as many details as you can.

- 3. What kept you from being able to connect to the online coursework? \_\_\_\_\_
- 4. Describe what you did to keep yourself connected. \_\_\_\_\_
- 5. Why was that so important to you? \_\_\_\_\_

***Part 3***

- 6. The PathwayConnect Curriculum Department is interested in placing experiences like yours in PC 101 Life Skills in September-October 2023, to inspire other students. Would you be interested in sharing your experience(s) with other students so they can learn from what you did?
  - a. Yes [directed to Part 4]
  - b. No [directed to end of the questionnaire - no]

***Part 4***

- 7. The PathwayConnect Curriculum Department is also interested in your help to shape the way we present your experience to PC 101 students. You can help us teach your experience in a way that other students will understand and emulate. Helping us in this way would be voluntary but can be highly rewarding. May we interview you in the future and possibly invite you to two meetings where you can

share your wisdom with us? The interview would be with James Findlay over Zoom and last about 15 minutes. The two meetings would be with James Findlay and a few other PathwayConnect administrators. Each meeting would last one hour. In the first meeting, you would help us design a way to share your experience. The second meeting would occur at the end of the study and you would reflect with us on the study's results.

- a. Yes I would like to participate [directed to Part 5]
- b. No I would not like to participate [directed to end of questionnaire - no]

***Part 5***

8. Will you share your email address? We will only use it to contact you about potential next steps. \_\_\_\_\_

We would like to obtain some identifying information from you. If we share your experience with PC 101 students, we would include your first name, the name of your country and a photo of you (which we would ask for later). Providing this information is optional. We will only use it in the PC 101 course.

9. What is your first name? \_\_\_\_\_
10. What country do you live in? \_\_\_\_\_

[End of Questionnaire - Yes]

Thank you for your time taking this questionnaire and your willingness to help the PathwayConnect Curriculum Department. We will evaluate your responses and reach out to you soon about potential next steps. You may now close this window.

[End of Questionnaire - No]

Thank you for your time taking this questionnaire. You may now close this window.

**Peer Mentor Questionnaire Evaluation Rubric**

Name of Peer Mentor: _____. If left blank, do not consider for SME.				
Did the respondent answer “Yes” to Question 1? Y/N. If no, do not consider for SME.				
Did the respondent answer “Yes” to Question 6? Y/N. If no, do not consider for SME.				
Did the respondent agree to be interviewed and meet with us in Question 5? Y/N. If no, do not consider for SME.				
Score 1: Relatable (Part 2)		Degree to which respondent’s story seems relatable to other students. Relatable means the peer mentor mentions situations and problems common for students like time pressure, device issues, connectivity problems, family support, infrastructure problems, motivation. Scale of 1-5, with 5 meaning it seems very relatable. _____		
Score 2: Differentiated (Part 2)		Degree to which respondent’s story illustrates one or more of these strategies from Pintrich’s context area of SRL (2000). Scale of 1-5, with 5 meaning it illustrates the strategy very well.		
		Perceive context _____	Monitor task and context conditions _____	Change or renegotiate task; change or leave context _____
Score 3: Compelling (Part 2)		Degree to which respondent’s story is compelling, or contains elements of struggle, sacrifice, cleverness in solutions, strength, determination, and growth mindset. Scale of 1-5, with 5 meaning it seems very compelling. _____		
Total Score _____				
Does Bloom approve of this peer mentor being a SME candidate? Y/N. If no, do not consider for SME.				

APPENDIX E  
SME INTERVIEW PROTOCOL

May I record this interview? The videorecording will include your voice and image. As you respond to the questions, please do not mention names of individuals in your responses.

In the questionnaire, you indicated that you have struggled to stay connected to your online coursework because of technical problems like internet connection issues or other technical issues. You also indicated that you would like to share this experience (these experiences) with me in more detail.

1. In the questionnaire, you shared with me the following experience where you overcame an internet connection issue so you could complete your online coursework. You said, [review the student's answer in the Peer Mentor Questionnaire to question 3.] Can you tell me more about that experience?

[If the interviewee does not seem to be a good communicator in response to question 1, politely thank them for their insights and end the interview at this point, informing them that I will reach out to them in the future if I want to gather more information from them.]

2. Talk about how you knew your access to the internet was going to be a problem for you to complete your online coursework [perceptions of context, (Pintrich, 2000)]
3. Talk about how you monitored the situation around your internet connection. For example, if you had to be aware of data costs, of the strength or speed of the signal, of the availability of the signal or of power [monitoring changing task and context conditions, (Pintrich, 2000)]

4. Talk about what changes you made so you could stay connected to the internet  
[change or leave context (Pintrich, 2000)]
5. How well did your strategy for staying connected work? Why did you feel that way? [evaluation of context (Pintrich, 2000)]
6. Thank you for sharing your experiences. The program designer and I are going to create a way for you to share your story with PathwayConnect students in PC 101. We would like you to look at what we have created and help us shape it so you feel it will work well for students. You mentioned in the questionnaire that you would be willing to volunteer an hour or two of your time soon to meet with us and some other peer mentors via Zoom to do this. Are you still willing? What are some good days and times for us to consider a meeting with you?

Thank you for taking time for this interview.

### Interview Notes Template

SME Name:		Notes
Strategies in Pintrich's Context Area of Self-Regulated Learning (2000)	Perceive the context	
	Monitor task and context conditions	
	Change or renegotiate task; change or leave context	
	Evaluate task; Evaluate context	



## Peer Mentor Interview Evaluation Rubric

These components added points to the Peer Mentor Questionnaire Rubric. Peer mentors with the highest total score between both rubrics became SMEs.

Score 1: Communicator	Degree to which the peer mentor offers shared their thoughts and feelings freely, clearly, and in abundance. Scale of 1-5, with 5 meaning the best communicator. _____			
Score 2: Relatable	Degree to which the peer mentor's story seems relatable to other students. Relatable means the peer mentor mentions situations and problems common for students like time pressure, device issues, connectivity problems, family support, infrastructure problems, motivation, etc. Scale of 1-5, with 5 meaning it seems very relatable. _____			
Score 3: Differentiated	Degree to which the peer mentor's story illustrates one or more of these strategies from Pintrich's context area of SRL (2000). Scale of 1-5, with 5 meaning it illustrates the strategy very well.			
	Perceive context _____	Monitor task and context conditions _____	Change or renegotiate task; change or leave context _____	Evaluate task; Evaluate context _____
	Award 10 points to ONE of these themes if the peer mentor's story illustrates it well and clearly with examples.			
	Focus on your Why _____	Have a Plan _____	Get Help _____	Sacrifice _____
Score 4: Compelling	Degree to which the peer mentor's story is compelling, or contains elements of struggle, sacrifice, cleverness in solutions, strength, determination, and growth mindset. Scale of 1-5, with 5 meaning it seems very compelling. _____			
Country: _____. Peer mentors who lived in a unique country geographically dispersed from the other SME finalist countries were given priority.				
Gender: _____. If all other scores and considerations are equal between two SME finalists, choose the finalist that will assure that there is at least one male or one female among all the finalists.				
Total Score _____				

APPENDIX F

PRE- AND POST-INNOVATION SURVEY

Thank you for taking a few moments to complete this short survey. This survey is about how you connected and stayed connected to this online course. Participation in this short survey is optional. If you do not participate, your grade in this course will not be impacted. Your identity will remain anonymous. Your instructor will not see the results of this survey. The survey should take you about five to ten minutes to complete.

By proceeding, you provide consent for Arizona State University to use any information you share according to the parameters stated on the page that contained a link to this survey.

Do you wish to participate in the survey?

- a. Yes [directed to Part 1]
- b. No [directed to Survey End section]

### **Part 1 [Educational Background]**

To protect your confidentiality, please create a unique identifier known only to you. To create this unique code, please record the first three letters of your mother's first name and the last four digits of a phone number. For example, if your mother's name was Sara and a phone number was 09 7001 234, your code would be Sar 1234. The unique identifier will allow us to match your responses between surveys when we analyze the data.

1. My unique identifier is: \_\_\_\_\_ (e.g., Sar1234, see paragraph above)
2. How many years of formal schooling did you have before you began this course?
  - a. 0-3
  - b. 4-7

- c. 8-10
  - d. 11+
3. Choose the response that best describes your academic performance in school before this course.
- a. I always got high marks (good grades)
  - b. I mostly got high marks (good grades)
  - c. I sometimes got high marks (good grades)
  - d. I rarely got high marks (good grades)
  - e. I never got high marks (good grades)
4. How often did you miss school during your last year of school before this course?
- a. Never
  - b. Rarely
  - c. Sometimes
  - d. Frequently

**Part 2 [Questions Section]**

Think about your work in PC 101 as a student in an online course. For each statement below, please rate yourself. If you feel the statement is not at all true of you, move the slider to 1. If you feel the statement is very true of you, move the slider to 7. If you feel the statement is more or less true of you, move the slider to the appropriate number. Please be honest. There is no right or wrong answer.

1. I usually study in a place where I can concentrate on my course work.

2. I make good use of my study time for this course.
3. I find it hard to stick to a study schedule. [Reversed]
4. I have a regular place set aside for studying.
5. I make sure I keep up with the weekly readings and assignments for this course.
6. I attend class regularly.
7. I often find that I don't spend very much time on this course because of other activities. [Reversed]
8. I rarely find time to review my notes or readings before an exam. [Reversed]

[The questions above come from Pintrich, (1991). The questions below were written by the design team in Design Meetings 4 and 5.]

To stay connected to the online coursework...

9. I ask for help as often as I need.
10. I make sure I have access to a computer, tablet, or phone, even if I don't own one of these.
11. I study where I will have as much electricity or battery power as possible.
12. I plan ahead so that I have enough time to use the internet when it is available.
13. I do what is necessary to reduce distractions.
14. I use the internet when it is faster and more reliable.
15. I use the internet when it is less expensive.

I am motivated to stay connected to the online coursework even when it is difficult because...

16. I remember why I am doing this.

17. I really want to complete this educational program.
18. I believe that getting an education is a religious responsibility.
19. I want to set a good example for my family.
20. I want to prepare myself to support my family

**Part 3 [Post-Innovation Questions - To the Treatment Group Only]**

1. This course included a few lessons from former students who shared strategies they used to stay connected to the online course in spite of technology barriers such as losing access to the internet, having a device break down or be stolen, running out of time for information on the internet to load, or running out of data. Each of these were called “Staying Connected.” How many of these did you read?
  - a. All of them
  - b. Most of them
  - c. A few of them
  - d. None of them
  - e. I don’t know what this is
2. Each “Staying Connected” story also included a space where you could add a response to one or more discussion prompts. For how many of these did you add a response?
  - a. All of them
  - b. Most of them
  - c. A few of them
  - d. None of them

- e. I don't know what this is
3. Did the lessons called "Staying Connected" teach you a new way to stay connected, or did they motivate you to stay connected more?
- a. Yes [direct to question 11]
  - b. No [direct to survey end]
  - c. I don't know, or I am not sure [direct to survey end]
4. Please describe how you used the lessons called "Staying Connected" to stay connected to this online course\_\_\_\_\_
5. How did you modify or adjust the strategies in these lessons to work for you?
6. What strategies have you used to stay connected that were not in the lessons called "Staying Connected?" \_\_\_\_\_

[Survey End]

Thank you for your time. You may now close this survey.

APPENDIX G  
MEETING NOTES TEMPLATES



## Design Meeting Note Taking Template

- Meeting #: \_\_\_\_\_
- Participants: \_\_\_\_\_
- Outcome: \_\_\_\_\_
- Key Discussion Points
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
- How was the outcome achieved? \_\_\_\_\_
- Any new ideas or actions?
  - \_\_\_\_\_
  - \_\_\_\_\_

## Critical Friend Meetings Notes Template

**Meeting 1 Objective:** Review the peer mentor questionnaire. Does it seem to be eliciting what we are looking for relative to RQ1?

**Notes:**

**Meeting 2 Objective:** Review the communicate. Does it seem to be transferring know-how strategies relative to RQ2?

**Notes:**

**Meeting 3 Objective:** Review the Pre- and Post-Intervention survey questions written in the Design Meetings for validity. Taken at face value, do they seem to be asking about a student's efforts to remain connected to the online coursework despite technical barriers?

## Notes:

### Reflection Meeting Notes Template

- **Preparation for Researcher-Practitioner:** Review the research journal that contains notes on my team leadership role throughout the study. Recall the mental model (Hill, 2016) formed at the beginning of the study. Be prepared to reflect on the team's performance and development during this meeting so I can make a new mental model as needed for future team leadership.
- **Meeting Outcome:** Determine what are the next steps the PathwayConnect Program Council could take to retain more students.
- **Research Questions and Findings:** Briefly present each research question and the findings. Take notes on meeting participant responses and reflections.
  - RQ1: What are the know-hows that some PathwayConnect students report having used to stay connected when access to coursework is a barrier?
  - RQ2: What does the PathwayConnect Program Council determine to be effective curriculum and design of the Staying Connected Lessons as an innovative approach to transferring know-how practices to other students?
  - RQ3: How and to what extent does participating in the Staying Connected lessons change students' use of strategies that help them persist?
  - RQ4: To what extent does supporting students to adopt know-how strategies impact student persistence in PC 101?
- What are the next steps the PathwayConnect Program Council could take to retain more students?

APPENDIX H  
STAYING CONNECTED LESSONS



Do you sometimes struggle to stay connected to this online course? Maybe the internet turns off, or it is too slow, or it is expensive. Maybe the power goes out. Maybe all you have is a phone or a computer that keeps breaking down..

But in an online course, staying connected is essential!

Keep reading to learn about Adea, a prior PathwayConnect student, and her suggestions to you for **how your "why" can support you staying connected.**

### Meet Adea from Nigeria

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I'd like to introduce you to Adea. Adea lives in Nigeria. She is a PathwayConnect graduate who is currently working toward a bachelor's degree in Applied Health through BYU-Pathway Worldwide.

Adea reflected with me about her academic journey through BYU-Pathway Worldwide. During our conversation, she shared, "I had faced a series of challenges ranging from the fact that I had no good Android devices, no laptop, there was no electricity where I was residing as at that time, internet services in my home country was quite expensive to afford, and if you can afford it, [it] often comes with a [terrible] signal or connection. ...During this period I was financially unstable while job hunting. ...I had support from friends to pay part of my tuition but that wasn't enough."

### Adea Needed Better Internet Connectivity

"All these factors at some point...posed a major setback in my PC101-PC103 coursework."

#### Inspiration

Adea wanted to share a scripture with you – a scripture that inspired her to find a solution to her Internet struggles. She said, "In [1 Nephi 3:7](#), it says that God will not give commandments to his children except he provides means and ways for them to accomplish the commandment which he has sent them. The journey that [you] have started...God is going to help [you stay] motivated."

#### Adea's Solution

"I was able to identify these major factors when I started my coursework with BYU-Pathway...the fear of losing this great opportunity of acquiring education and my purpose was the major drive that kept me solely motivated...I could hardly back out even with the many barriers that I encountered."

Adea shared three ideas for staying connected:

- 1** "I started targeting these factors from the least to the highest in ranking which was getting myself a good Android phone by talking to friends, who were willing to assist with a phone. Meanwhile, I could attend weekly gatherings and do most of my weekly assignments and study modules using my friend's phone whenever she returned from work...I sometimes [managed] my phone plugged directly into the electricity supply to [access] my coursework when I [didn't] have access to my friend's phone."
- 2** "Secondly, I spent most of my time in the chapel where I could [access] the power supply and sometimes the internet services due to the insufficient power supply in my area... By this time I often [studied] ahead and [did] my assignment ahead of time. Getting a data subscription as an applicant was also a major concern, but I was able to tackle this by using the night data bundles most [of the] time since it was affordable. I never stopped pushing, though I sometimes felt overwhelmed by the thought of paying my tuition despite the fact I was unemployed. [Eventually] I got an opportunity to work as a home tutor, which allowed me to save up for my tuition."
- 3** "Stay disciplined and expect that challenges are going to come. It's not going to be smooth. It's never promised to be a smooth journey, but what is going to help [you] to stay motivated and move forward is to remember [your] purpose, [your] ultimate why...Challenges are going to come, but when you remember your why, why you started the program I think that is going to be a great motivation to move forward irrespective of whatsoever you encounter."

### Discussion

Respond to at least one of these prompts. You might also find it helpful to respond to posts from your peers.

- What parts of Adea's story do you relate to?
- Is Adea's situation one that might help you ?
- What scripture inspires you to stay connected to this course and complete work?
- Are you considering adopting Adea's solution? If so, will you be making any changes to her ideas?



W03 - Staying Connected: Have a Plan

James Findlay

All Sections

Do you sometimes struggle to stay connected to this online course? Maybe the internet turns off, or it is too slow, or it is expensive. Maybe the power goes out. Maybe all you have is a phone or a computer that keeps breaking down.

But in an online course, staying connected is essential!

Keep reading to learn about Maribel and Nancy, two prior PathwayConnect students, and their suggestions to you for **how having a plan can support you staying connected.**

**Meet Maribel from Argentina and Nancy from the Philippines**

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I'd like to introduce you to Maribel and Nancy. Maribel, who lives in Argentina, is a PathwayConnect graduate who is currently working toward a bachelor's degree in Communications through BYU-Pathway Worldwide. Jemia has also graduated from PathwayConnect and is working on a bachelor's degree in Applied Business Management.

Maribel reflected with me about her academic journey through BYU-Pathway Worldwide. During our conversation, she shared, "I live in a rural area. When I first moved here 5 years ago the maximum Internet speed connection available was 5 megabytes. There was no optic fiber either. The internet reached my house through some air devices [only]. As a result, the Internet connection was unstable. At times, it would work, and then all of a sudden I would lose it entirely or [it would] become terribly slow."

Nancy told me she was in a similar situation. She said, "...I started my online studies using my old phone and a second-hand laptop, which I bought from my friend in the church. I [had] these but I [didn't] have internet in our home, which is one of the barriers. ...I also [struggled] with using devices like laptops, which I am not familiar [with]."

**Both Women Needed Help Staying Connected**

Maribel told me, "I normally like to finish what I start. I don't like to leave it incomplete, so once I had started, I wanted to finish and get my certificate and get to the end." Nancy said, "I do not want to miss my assignments and lessons, and if I fail to stay connected, I know it will be hard for me to cope... I want to pursue my education and get a degree."

**Inspiration**

Maribel said she found inspiration in [Matthew 7:8](#), "For every one that asketh receiveth; and he that seeketh findeth; and to him that knocketh it shall be opened." Nancy also thought of the Savior's words in [Matthew 6:33](#), "But seek ye first the kingdom of God, and his righteousness; and all these things shall be added unto you."

**Maribel and Nancy's Solutions**

Notice how Maribel and Nancy created plans and backup plans that were similar:

Maribel	Nancy
"I would make the most of the times in which the Internet connection worked best, very early in the morning or late at night. Since I'm a night owl I would organize my study time around midnight.	"In order to have more time to stay connected while working on my online assignments, I bought pocket WIFI. I also looked for a data provider with longer data to use, such as Smart or Globe, but I had to pay an affordable price to get a data promo from the supplier."
"I would also try to always have data on my cell phone to attend the gatherings if necessary although the signal was not good either."	"It requires sacrifice, so I try to find other options. For example, I might get an e-load so that my phone has data, at which point I can link my laptop to my phone and continue working on my course assignments."
"In some cases, I would go to my chapel and connect to the Internet there. I had previously asked for my Bishop's permission and he had granted it. I would go there whenever the Bishopric was meeting or there were any other activities, or I would use the key to the building given to me as the Primary President."	"I made the decision to go to the church and use the WIFI there so I could access my weekly modules."

Maribel said that many people "have multiple options, but sometimes they do not realize that they do, that they have so many options. ...I found them," and so can you!

**Discussion**

Respond to at least one of these prompts. You might also find it helpful to respond to posts from your peers.

- What parts of Maribel's and Nancy's story do you relate to?
- Is their situation one that might help you ?
- What scripture inspires you to stay connected to this course and complete work?
- Are you considering adopting some of their solutions? If so, will you be making any changes to their ideas?



## W04 - Staying Connected: Sacrifice

James Findlay  
All Sections

Do you sometimes struggle to stay connected to this online course? Maybe the internet turns off, or it is too slow, or it is expensive. Maybe the power goes out. Maybe all you have is a phone or a computer that keeps breaking down.

But in an online course, staying connected is essential!

Keep reading to learn about *Jemila*, a prior PathwayConnect student, and her suggestions to you for **how sacrificing can support you staying connected**.

### Meet Jemila from Zimbabwe

Jemila is a PathwayConnect graduate who lives in Zimbabwe. She plans to graduate with a bachelor's degree in Applied Technology in December 2023. During our conversation, she shared four challenges she has faced:

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1. "I was kicked out of proctored exams several times due to a slow network."
2. "I submitted late assignments many times due to power cuts."
3. "I struggled with a slow computer we were sharing with my husband to do assignments."
4. "I struggled with buying data to do assignments."

"I hope education will provide me with an opportunity to break free from poverty. I cannot provide enough food on the table for myself. I can't take care of my dear loved ones. If I get sick, I can't pay hospital bills. I do not have a home of my own nor do I have a mode of transporting myself from

one point to another."

### Jemila Needed To Find Alternatives

"Where I stay, I am in the farming area, and when it is raining, trees fall on electrical cables and all that stuff. So you can go even up to two weeks without power, and I'm supposed to submit assignments. Like I'm doing applied technology. That's project after project and project after project, and so I had an option, either to find alternatives or to quit."

### Inspiration

Jemila looks to this scripture as inspiration for her to never give up: "For behold, it is not meet that I should command in all things; for he that is compelled in all things, the same is a slothful and not a wise servant; wherefore he receiveth no reward. Verily I say, men should be anxiously engaged in a good cause, and do many things of their own free will, and bring to pass much righteousness; For the power is in them, wherein they are agents unto themselves. And inasmuch as men do good they shall in nowise lose their reward" ([Doctrine and Covenants 58:26-28](#) ).

### Jemila's Solutions

Jemila shared three solutions:

- 1 "I worked closely with my instructors who were and are still kind enough to help me retake exams and extend submission deadlines or [keep] the quizzes open for me to retake them.
- 2 "We gave up several things and invested in our education. When we did not have, we would go to Church to do assignments. ...chapels have solar systems. We would go there to do assignments, and now we have bought a small generator to help charge our laptops. We hope to have a solar system in place so we can have both solar power and generator power.
- 3 "For network [costs], though data is expensive we always buy data from two different service providers. In case one is down, we use another one. We always have plan B."

Jemila gave you some advice at the end of our conversation. "...the most important thing that I would like to say is, for one to succeed...you should be willing to give something, and you should be willing to say, "What is it that I'm going to give so that I... succeed?"

### Discussion

Respond to at least one of these prompts. You might also find it helpful to respond to posts from your peers.

- What parts of Rhoda's story do you relate to?
- Is her situation one that might help you ?
- What scripture inspires you to stay connected to this course and complete work?
- Are you considering adopting Rhoda's solution? If so, will you be making any changes to her ideas?



## W05 - Staying Connected: Get Help

James Findlay

Oct 14 at 12:03pm

*Do you sometimes struggle to stay connected to this online course? Maybe the internet turns off, or it is too slow, or it is expensive. Maybe the power goes out. Maybe all you have is a phone or a computer that keeps breaking down.*

*But in an online course, staying connected is essential!*

*Keep reading to learn about Ashanti, a prior PathwayConnect student, and her suggestions to you for **how getting help can support you staying connected.***

### Meet Ashanti from Uganda

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I'd like to introduce you to Ashanti, who lives in Uganda. Ashanti is a PathwayConnect graduate who is now working on a bachelor's degree in Applied Business Management.

Ashanti reflected with me about her academic journey through BYU-Pathway Worldwide and how she started with very little. She said, "When starting PathwayConnect, I did not have a computer, and I was doing my assignments using a phone."

### Ashanti Needed Help with a Device and Internet Costs

"The challenge I faced while using a phone was that I could not download files, for example, Excel spreadsheets and Word documents. ...yet some of the assignments were supposed to be done in the templates provided in the course materials. I also struggled with having enough data especially when the course materials contained videos, which were part of the assignment preparation. I often opted for the transcript part of the video but I somehow found it confusing as the transcript contained a full description of the video including the narrator's actions."

### Inspiration

Ashanti was inspired by this scripture, "Now when our hearts were depressed, and we were about to turn back, behold, the Lord comforted us, and said: Go amongst thy brethren, the Lamanites, and bear with patience thine afflictions, and I will give unto you success. And now behold, we have come, and been forth amongst them; and we have been patient in our sufferings, and we have suffered every privation; yea, we have traveled from house to house, relying upon the mercies of the world—not upon the mercies of the world alone but upon the mercies of God" ([Alma 26:27-28](#)). "I kept praying to Heavenly Father for help," said Ashanti. "I relied on Him and He did not forsake me."

### Ashanti's Solutions

Ashanti shared three solutions:

1

"For the internet-data challenge, I solved it by going to the chapel every evening after work and using the church Wifi to complete my assignments. I could watch the videos and make notes and use them later to answer the assignment questions. She also advised me that if students buy internet data, in bundles, they should buy monthly and not daily, then budget their time like a financial budget.

2

"For the computer challenge, I used to ask friends and sometimes used my work computer during lunch break when everyone [had] gone out for lunch."

3

"Another thing that helped me to stay connected was to communicate with my instructor and let them know of my situation so that they do not lock the assignment and give me a week's period to complete and submit it. Communicating with the instructor on time really helped me."

### Discussion

*Respond to at least one of these prompts. You might also find it helpful to respond to posts from your peers.*

- What parts of Ashanti's story do you relate to?
- Is her situation one that might help you ?
- What scripture inspires you to stay connected to this course and complete work?
- Are you considering adopting Ashanti's solution? If so, will you be making any changes to her ideas?



Do you sometimes struggle to stay connected to this online course? Maybe the internet turns off, or it is too slow, or it is expensive. Maybe the power goes out. Maybe all you have is a phone or a computer that keeps breaking down.

But in an online course, staying connected is essential!

Keep reading to learn about Hakim, a prior PathwayConnect student, and his suggestions to you for **how sacrificing can support you staying connected.**

### Meet Hakim from Ghana

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I'd like to introduce you to Hakim, who lives in Ghana. Hakim is a PathwayConnect graduate who is now working on a bachelor's degree in Applied Business Management.

Hakim reflected with me about his academic journey through BYU-Pathway Worldwide. "I did not have a laptop and the phone I was using then was a very small Samsung phone that [couldn't] even install [the] Canvas student app on it. Another thing was I [worked] as a teacher and [taught] seminary after work."

### Hakim Needed to Sacrifice Even Though he was Busy

After a long day teaching school and Seminary and studying for Pathway in-between, Hakim was tired, but he needed more time to study. "I knew I had no laptop and my schedules were very tight so I prayed for the Lord's help so I could finish PathwayConnect and continue with my Degree Online."

#### Inspiration

Hakim shared this scripture with me when he thought about what inspired him to sacrifice his time for education. "Whatever principle of intelligence we attain unto in this life, it will rise with us in the resurrection" ([Doctrine and Covenants 130:18](#) ).

#### Hakim's Solutions

Hakim shared three solutions:

- 1** Hakim had a friend who shared his interest in information technology. His friend also had a laptop. "So I discussed it with him and he then accepted [that]...I [could] use it...but the...agreement was at night, because during the daytime, he [would] be using it to work and stuff. So it [was] only at night that I [would] have access to it. So I go to school to teach [and] come back to teach...seminary. Then after seminary class I'll go home and then I have to take my bath, and then eat, and I go to his house. But what I do before I go to his house...if it is an essay that I have to write, I will...gather all the ideas and then put them down in my notebook and then, after I'm done with everything in the house, then I have to walk to his house. Lucky enough for me, we're staying in the same community, and so it wasn't that far from my house. ...the time I...start, he's asleep, and I have to sacrifice my sleep for the assignments that I need to submit so that I'll be able to submit it before the due dates."
- 2** Hakim says students should "set a goal right from the day they [start]...the application. ...These goals should be a goal that will stretch them, that will help them to go to make all the resources useful for them."
- 3** He added, "They shouldn't forget to pray to Heavenly Father to involve Heavenly Father in everything they do because in all aspects it is Heavenly Father that directs us, guides us and then protects us and gives us more knowledge, and so they should always involve Heavenly Father in everything they do."
- 4** Finally, Hakim advises students to "Learn to build...stronger connections with people who may have resources that will help them to attain their goals. If they are able to do that, then they will be able to get such help from those people who have their resources."

"I never gave up on my goals. I've cried countless times at midnight because it was so tough for me...but I was so passionate about my education. [I wanted] to achieve my dreams."

### Discussion

Respond to at least one of these prompts. You might also find it helpful to respond to posts from your peers.

- What parts of Hakim's story do you relate to?
- Is his situation one that might help you ?
- What scripture inspires you to stay connected to this course and complete work?
- Are you considering adopting Hakim's solution? If so, will you be making any changes to his ideas?



APPENDIX I  
EDUCATIONAL PREPARATION

**Table I1***Prior Formal Education of Participants*

Group	Years	N	%
Treatment	0-3	148	18.8
	4-7	68	8.6
	8-10	50	6.3
	11+	523	66.3
Control	0-3	184	18.8
	4-7	97	9.9
	8-10	59	6.0
	11+	638	65.2

**Table I2***Prior Academic Performance of Participants*

Group	Prior Grades	N	%
Treatment	I never got high marks (good grades)	3	0.40
	I rarely got high marks (good grades)	32	4.10
	I sometimes got high marks (good grades)	242	30.70
	I mostly got high marks (good grades)	396	50.20
	I always got high marks (good grades)	111	14.10
	Missing	5	0.60
Control	I never got high marks (good grades)	8	0.80
	I rarely got high marks (good grades)	36	3.70
	I sometimes got high marks (good grades)	280	28.60
	I mostly got high marks (good grades)	479	49.00
	I always got high marks (good grades)	165	16.90
	Missing	10	1.00

**Table I3***Absence Rate of Participants During the Last Year*

Group	Frequency	N	%
Treatment	Frequently	62	7.90
	Sometimes	212	26.90
	Rarely	280	35.50
	Never	183	23.20
	Missing	52	6.60
Control	Frequently	73	7.50
	Sometimes	268	27.40
	Rarely	343	35.10
	Never	232	23.70
	Missing	62	6.30

APPENDIX J  
IRB APPROVAL/EXEMPTION



EXEMPTION GRANTED

Teresa Foulger  
 Division of Teacher Preparation - West Campus  
 602/543-6420  
 Teresa.Foulger@asu.edu

Dear [Teresa Foulger](#):

On 6/12/2023 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Findlay Dissertation
Investigator:	<a href="#">Teresa Foulger</a>
IRB ID:	STUDY00018138
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none"> <li>• Critical Friend Meetings Agenda Objective and Notes Template.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• Design Meeting Note-Taking Template.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• Foulger Findlay BYU-I IRB Approval.docx.pdf, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc);</li> <li>• Foulger Findlay BYU-PW Approval.pdf, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc);</li> <li>• Foulger Findlay BYU-PW Permission to Use Secondary Data_3rd submission.pdf, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc);</li> <li>• IRB Social Behavioral Protocol_3rd submission.docx, Category: IRB Protocol;</li> <li>• Peer Mentor Interview and Notes Templates.pdf,</li> </ul>

	<p>Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</p> <ul style="list-style-type: none"> <li>• Peer Mentor Questionnaire &amp; Screening Tool.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• Pre- and Post- Innovation Survey .pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• recruitment_methods_BYU-Pathway Worldwide Administrators Recruitment and Consent Email_3rd submission.pdf, Category: Consent Form;</li> <li>• recruitment_methods_Critical Friend Recruitment and Consent Email_3rd submission.pdf, Category: Consent Form;</li> <li>• recruitment_methods_PC 101 Student Recruitment and Consent Letter - Control Group_3rd submission.pdf, Category: Consent Form;</li> <li>• recruitment_methods_PC 101 Student Recruitment and Consent Letter - Treatment Group_3rd submission.pdf, Category: Consent Form;</li> <li>• recruitment_methods_Peer Mentor Recruitment and Consent Email_3rd submission.pdf, Category: Consent Form;</li> <li>• Reflection Meeting Questions and Notes Template.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> </ul>
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The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (1) Educational settings, (2)(ii) Tests, surveys, interviews, or observation (low risk) on 6/9/2023.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

If any changes are made to the study, the IRB must be notified at [research.integrity@asu.edu](mailto:research.integrity@asu.edu) to determine if additional reviews/approvals are required. Changes may include but not limited to revisions to data collection, survey and/or interview questions, and vulnerable populations, etc.

Sincerely,

IRB Administrator