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HYFLEX: A LEADERSHIPS' PERSPECTIVE OF SELF-EFFICACY POST-PANDEMIC

By

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Dissertation

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Abstract

The HyFlex model for instruction allows for a student to choose if they will attend class in person, online synchronicity, or asynchronously. The aim of this mixed-method study was to answer the central question “to the central question, “How does the HyFlex delivery method impact faculty self-efficacy regarding teaching?” at Keweenaw Bay Ojibwa Community College (KBOCC). Sixteen members of the leadership at KBOCC completed a Likert scale survey and six participants agreed to be interviewed. Based on the results of this study, the leadership at KBOCC are open to the idea of implementing the HyFlex model. The faculty and administration reported high self-efficacy regarding student learning, performance, and satisfaction regarding their ability to deliver online materials and the use of the HyFlex model. They are forward thinking and consider the needs of not only current students but of future students. Leadership at KBOCC feels that providing online classes and HyFlex opportunities is a way to expand not only the student population, but to diversify the courses that are offered. Given the need to increase education opportunities in healthcare programs, the use of the HyFlex model may create the opportunity for Native American students to gain access to courses and expertise, which may not have otherwise been possible. It is imperative that traditionally underrepresented groups enter the healthcare fields to improve their personal situation and break the cycle of poverty that they have endured for generations and to improve healthcare and healthcare outcomes for members of their communities.

Keywords: hybrid-flexible, non-traditional learner, tribal college, distance education

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This is for Luran, Darling Jaz, Oakleigh, Cypress, and all lifelong learners. Our paths might not be easy, and they may have unpredicted forks, but we got this! If sometimes you feel that the path is blocked, it might be, but once you take a breather and look around, you may just find a new trail.

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Chapter One: Introduction to the Study

The novel Coronavirus (COVID-19) was first detected in December 2019 (WHO, 2020). In March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic and warned it was highly contagious (WHO, 2020). To stop the spread of the virus, stay-at-home orders were put in place, and schools were ordered to close (CDC, 2022). It was estimated that by April 9, 2020, over 1,500,000,000 students worldwide could not attend school (UNESCO, 2020). As the pandemic continued to spread and students were forced to stay home, traditional classrooms had to quickly transition to online learning platforms. However, many of these transitions were not seamless. Concerns regarding technological choices made by educational institutions during the COVID-19 pandemic were raised. In fact, Teräs et al. (2020) warned that the impact could be detrimental not only to the individual learners, teachers, and parents; but could also have “unpredicted long-term macro-level societal impacts.”

As education moves back into the classroom, it is imperative that tools, technology, and lessons learned during the COVID pandemic be used to inform best practices as institutions strive to reopen and operate with equity. Most institutions of higher education are looking for novel ways to increase enrollment, improve educational offerings, increase student retention and recruitment, keep costs down, keep education affordable, and create an equitable learning environment (Burke, 2021; National Education Association, 2021; Rapanta et al., 2021). These efforts may seem overwhelming but solutions are available. By considering what technologies and tools worked during the COVID-19 pandemic, it may be possible to rethink how education has traditionally been done. The potential solution of Hyflex courses (Hybrid Flexible) is examined in this study in order to determine if this modality can increase student course completion, retention, and graduation.

The HyFlex Model

Hybrid-Flexible (HyFlex) is a term coined by Dr. Brian Beatty (2010) and is a learning strategy intended to provide a more flexible environment that allows students to determine how they will attend each class session. In the HyFlex model, students are self-directed in their instruction and the instructor develops the content and provides the delivery for in-class sessions in person, synchronously online, or asynchronously online (Kyei-Blankson et al., 2014). The HyFlex model offers flexibility for students and reduces the number of sections that must be offered and maintained, as students do not register for an online or in person session (Beatty, 2010).

Because of student flexibility, the HyFlex Model has gained in popularity since the global COVID-19 pandemic (Kohnke & Moorhouse, 2021; Rider & Moore, 2021). Although concerns have been raised regarding student communication in the classroom, students appear to appreciate the flexibility that the HyFlex Model provides (Kohnke & Moorhouse, 2021). As institutions of higher education strive to be equitable and culturally relevant, it is possible that the implementation of the HyFlex model may increase self-efficacy, student satisfaction, and overall retention and graduation rates in STEM degree programs.

Keweenaw Bay Ojibwa Community College

Keweenaw Bay Ojibwa Community College (KBOCC) is a tribal college in L'Anse, Michigan. In December 2010, KBOCC was approved by the Department of Education to receive funds under Title IV for federal student aid and the Bureau of Indian Education approved the institution to receive funding under the Tribally Controlled Community College Assistance Act. In June 2013, KBOCC was granted full accreditation by the Higher Learning Commission of the North Central Association of Colleges and Schools (Keweenaw Bay Ojibwa Community

College, 2022). KBOCC operates as a non-profit educational corporation, which allows the college “to establish and operate institutions granting post-secondary degrees and certificates, and to coordinate and regulate higher education on the L’Anse Indian Reservation” (Keweenaw Bay Ojibwa Community College, 2022).

For the 2019-2020 academic year, KBOCC had a student population consisting of 79 students, with a student-to-faculty ratio of 5:1. Seventy-one percent of the student population was female, 61% reported being Native American, and 54% were over the age of 25. For the 2019-2020 academic year, 34% students received a Pell Grant, 81% of students received other grant aid, and 0% of students received student loan money (Keweenaw Bay Ojibwa Community College, 2020). Many tribal colleges do not allow students to take out student loans, as these students have often lived in generational poverty, have no credit history, or are unemployed (Diep, 2016). KBOCC is implementing a Health Care Science degree program that aims to “provide science courses and other STEM curricula in an online platform would allow these individuals the opportunity to gain a post-secondary education, improve their current situations and break the cycle of poverty that they have been enduring for generations” (Roth, 2022).

In 2021, a scientific researcher and online educator was hired by KBOCC to provide hands-on science classes in an online environment. This was not only in response to the COVID-19 pandemic, but as part of the College’s Strategic Plan (Keweenaw Bay Ojibwa Community College, 2020). Before the COVID-19 pandemic, most courses were delivered in a “traditional classroom” setting. In response to the pandemic, the college had to quickly transition, as did many other institutions of higher education, and the college recognized the need to have experienced faculty available to teach online science classes. To help with this transition into the newly created Health Science programs at KBOCC, they have received federal funds to improve

access to technology, tools, and develop new courses and curriculum (Roth, 2022). This study explored the perceptions of leadership regarding online learning and the HyFlex delivery modality at KBOCC in order to help inform decisions and best practices. This information will be valuable as the college continues to expand educational opportunities to tribal and non-tribal students.

Study Overview

Purpose Statement

The purpose of this mixed-methods study is to gain insight into the perspectives of the leadership learning community at KBOCC regarding the potential implantation of the HyFlex model. This study will focus on the administration and faculty self-efficacy and satisfaction of delivering online education materials. This study may inform on the phenomena of learning in a HyFlex environment.

Research Questions

Supiano (2020) reported that both faculty and students complained about the mental and emotional toll of shifting to the online learning environment as a result of the global pandemic. The exhaustion felt by many students and educators during the pandemic has been coined “Zoom fatigue,” as Zoom is the most prevalently used online platform (Fosslien & Duffy, 2020; Sander & Bauman, 2020; Wiederhold, 2020; Bailenson, 2021). Many students expressed concerns about their work-life balance during the pandemic, especially as it pertained to attending synchronous online class meetings that were scheduled during working hours (Singh et al., 2021). However, it is possible that some students prefer one delivery method over another depending on the daily demands they are experiencing outside of coursework. The HyFlex model allows for flexibility

of the student. In contrast, faculty do not have a choice about participation mode, and they must provide both an online and a classroom experience that supports student learning.

Quantitative Research Question

What is the relationship between the perception of delivering online learning materials and faculty and administration self-efficacy and student learning, performance, and satisfaction?

Hypothesis

The researcher proposed the following hypothesis:

H₀: Delivery modality has no impact on faculty and administration self-efficacy and student learning, performance, or satisfaction.

H₁: Delivery modality had an impact on faculty and administration self-efficacy and student learning, performance, or satisfaction.

Qualitative Central Question

How does the HyFlex delivery method impact faculty self-efficacy regarding teaching?

Sub-questions

1. How do faculty and administration perceive the advantages and limitations of implementing HyFlex courses?
2. How do the perceptions of delivery methods and satisfaction differ between faculty and administration?
3. How do faculty choose to deliver course materials?
4. How do faculty and administration perceive student learning, performance, or satisfaction with different delivery modalities?

Definitions of Terms

For the purpose of this study, the following definitions will be used. Additional definitions can be found in the glossary (Appendix F).

Andragogy. The art and science of helping adults learn (Knowles et al., 2020).

Asynchronous online learning. Independent learning that provides learners the flexibility to participate in the education process when it is convenient for them. Time and location are independent of the instructor and classmates (Francescucci & Rohani, 2019).

Culturally relevant pedagogy. A pedagogy specifically committed to collective empowerment, not just the individual. Requires that students maintain cultural integrity while striving for academic success (Ladson-Billings, 1995).

Hybrid-Flexible (HyFlex). In the HyFlex teaching model, students are self-directed in their instruction and the instructor develops the content and provides the delivery for in-class sessions in person, synchronously online, or asynchronously online (Kyei-Blankson et al., 2014).

Historical trauma. The “cumulative emotional and psychological wounding over the lifespan and across generations, emanating from massive group trauma” (Heart et al., 2011).

Delimitations

Participants in this mixed-method study were restricted to faculty and administration during the Summer 2022 session at KBOCC. The researcher has chosen the objectives, research questions, and framework based on personal interests and experience. It should be noted that the validation of obtaining and analyzing the data from this study may include researcher bias.

Although it is possible that the Hawthorn Effect (McCambridge et al., 2014) or the Observer Effect may have influenced the participants (Sassoli de Bianchi, 2012), it is challenging to know how phenomena may be experienced by a different researcher or experienced by different participants (Trochim, 2001).

Limitations

This mixed-method study has limitations that affect generalizability. A paradigm has existed for almost as long as distance education, in which students prefer flexible learning, but institutions of higher insist that learning can only occur in person and on campus (Rapanta et al., 2021). The study will be limited to a convenience sample of faculty and administration who are part of the KBOCC learning community during an eight-week summer session. Survey response rate and completion with informed consent will be limited to those who chose to participate in the study and based on self-reported data.

Significance of the Study

It has been suggested that the HyFlex model promotes student success, as it allows students to choose how they will attend class from session to session based on convenience, their learning progress, personal social interaction preferences, or other factors important to them at the time. Instructors must be prepared to deliver materials in all modalities and are not afforded the same flexibility as the students (Kyei-Blankson et al., 2014; Beatty, 2019; Kohnke & Moorhouse, 2021). This study is significant because it will allow for an analysis of the KBOCC learning communities' leadership perceives self-efficacy toward delivery materials through different modalities. These perspectives will be compared to the phenomenon to the potential advantages and limitations of implementing HyFlex courses.

Summary

Chapter one introduced the study. It outlines the need for understanding faculty and administration perceptions regarding the implementation of HyFlex courses. This mixed-methods study will explore the central question of how different delivery methods impact faculty self-efficacy regarding teaching. This study seeks to understand how the KBOCC learning communities' leadership perceives the advantages and limitations of implementing HyFlex courses.

Chapter two will review literature that is both directly and peripherally relevant to HyFlex class research studies. The literature review will examine significant scholarly works that have compared asynchronous, synchronous, and HyFlex teaching methods and how they may inform best-practices teaching in a COVID post-pandemic era. In particular, Native American inclusion and opportunities in STEM and medical fields will be examined. Literature pertaining to this study's specific hypotheses will be examined to develop a broader understanding of the research and results already in existence, and/or to justify the inclusion of variables studied within this research.

Chapter Two: Review of Related Literature

Education, particularly higher education, provides so many benefits to individual prosperity, society, and the economy (Faulkner, 1959; Bethune, 1999; Saltmarsh & Zlotkowski, 2011). Historically in the United States, higher education has been only accessible to the wealthy or students who lived close to campus, but with improvements in technology, there is a possibility to lower the cost of education, and also enable students to gain an education remotely (Pregowska et al., 2021). Remote education, particularly, can enable adult learners to gain degrees that were otherwise unobtainable due to family or employment obligations (Flint, 2005; Baird et al., 2021). Additionally, remote education can be critical for higher education during times of social disruption such as during the Covid pandemic of 2020. At the start of the pandemic, the world's societies closed business and in-person meetings, including schools (Singh et al., 2021). In order for schools and colleges to continue education, there was a rush to transform learning materials into remote, online formats (Bozkurt et al., 2020; Lee & Lee, 2021). As education moves back into the classroom, it is imperative that tools, technology, and lessons learned during the COVID pandemic be used to inform best practices as institutions strive to reopen and operate with equity. Ideally transferring to remote learning with multiple learning options for students, such as HyFlex, will increase accessibility to higher education, but we have yet to understand how these alternative modalities of learning impact the learning communities' satisfaction and self-efficacy.

The affordability and thus accessibility of higher education is a chief concern in the United States (Grasgreen, 2019). As the cost of degree programs increases, access to education for low and middle-class families declines, and this dichotomy has a direct, negative impact on the country's economic, political, and social health (Faulkner, 1959; Bethune, 1999; Saltmarsh &

Zlotkowski, 2011). In addition to the worry about reduced access to education in the United States, there is the worry that this reduces the competitive edge that the United States has held in the past. “The world is flat” was a concept developed by Friedman in 2005 that stated that the global economic “playing field” between developed and emerging countries is leveling and that individuals, as well as companies, are becoming part of a large, global supply chain. This phenomenon is occurring in part due to the collapse of communism, the dot-com bubble and the bubble burst, Y2K fears, and fiber-optic investments, but also because of increased access to education around the world (Friedman, 2005). This global access to education and increased global networking has resulted in a “leveling of the playing field” and an explosion of wealth among the populace in many developing and emerging nations (i.e. China and India) (Friedman, 2005). Friedman (2005) argued that the United States would fall behind if it did not learn and develop faster and that our institutions of education needed to be more accessible, flexible, and adaptable to technological advances.

Quantitative Research Question

What is the relationship between the perception of delivering online learning materials and faculty and administration self-efficacy and student learning, performance, and satisfaction?

Qualitative Central Question

How does the HyFlex delivery method impact faculty self-efficacy regarding teaching?

Sub-questions

1. How do faculty and administration perceive the advantages and limitations of implementing HyFlex courses?
2. How do the perceptions of delivery methods and satisfaction differ between faculty and administration?

3. How do faculty choose to deliver course materials?
4. How do faculty and administration perceive student learning, performance, or satisfaction with different delivery modalities?

The literature that will be reviewed in Chapter Two considers the importance of education not only from the micro-level but also from the macro-scale. The desires of leadership at KBOCC seek to provide an affordable, high-quality education that not only aims to increase the upward mobility of the individual student, but they also desire to improve the community as a whole. Within education, their goal is to break the cycle of generational poverty that traditionally disenfranchises historically marginalized people, but to also help the community grow and heal (Roth, 2022). There are many tools that can be used toward accomplishing these goals by leadership at KBOCC to help ensure that their students are able achieve their goals, including the use of online technologies, OER materials, dual-enrollment programs, inclusion of culture in the classroom, and the HyFlex Model. The research questions addressed in this mixed-method study focus on only the HyFlex modality.

Economics of Higher Education

Human Capital Theory (HCT) was first proposed by Adam Smith in the 18th century and has been widely used in educational economics since the 1960's (Marginson, 2017). This theory refers to the knowledge and characteristics a person has that can contribute to their ability to be productive (Acemoglu & Autor, 2011). This is a rather general definition and there have been multiple views published on exactly what "human capital" is. The original theory suggested that the more an individual gained knowledge the more they would earn, and so education could be thought of as an investment (Acemoglu & Autor, 2011). Human Capital Theory not only plays a role in college choice by a student but also in government funding of education (Paulsen &

Smart, 2001). Because it is not guaranteed that obtaining a higher degree or which school the degree is earned will directly translate into higher wages, the economics of education and where to invest in “human capital” has been studied at length (Acemoglu & Autor, 2011; Burgess, 2016; Marginson, 2017; Lovenheim & Turner, 2020). Wages are staying stagnant, tuition and textbook costs continue to increase (Hoffower, 2018). It is evident that the cost of higher education cannot continue to increase if there is income inequality and institutions of higher education need to find creative ways to deliver materials in a cost-effective manner.

Affordability means different things to different individuals (Paulsen & Smart, 2001). Whether college is affordable or not depends on how it is valued. If obtaining higher-paying employment is of value, then college may be considered affordable no matter what the cost. If a student starts a degree program with financial aid and loans but does not complete the program, this is not affordable (Baum, 2017). Regardless of which category a student is in, overall student debt in the United States is rising. In 2016, the federal government dispersed student loans of about \$95 billion (Congress of the United States Congressional Budget Office, 2016). It is estimated that the average college graduate of the class of 2017 has more than \$38,000 in student loan debt (Fay, 2019). In 2015, it was estimated that a person with only a high school diploma will earn about \$30,000 per year, and graduates with BS/BA earn an average of around \$50,000 a year (Loveless, 2015). If a graduate earns around \$50,000 a year, stays single, and pays close to \$500 a month for ten years, they will be able to pay off their student loans (Fay, 2019). Although that repayment scheme does not seem very practical, it is even more challenging for students that took out student loans but did not graduate.

The cost of college attendance has risen and the question of how much an individual or family is willing to or can pay impacts lower-income students more than higher-income students

(Paulsen & Smart, 2001). Low-income students are being impacted by “high sticker prices.” In 2016, a survey of incoming freshmen was conducted nationwide by Royall & Co. It was reported that 18.6% of students didn’t attend their first-choice college because of financial reasons. In a separate study, 41% of students who did not attend the first-choice college had no financial help from their families (Seltzer, 2017). But not only is the choice of college a consideration, but completion of a degree is also, as lower-income students are less likely to complete a higher education degree (The Hechinger Report, 2017). In 2016, it was estimated that over 50% of community college students live in a household with an income of less than \$20,000 (National Center for Educational Statistics, 2020a). It is also estimated that about 80% of community college students work, with approximately 40% working full-time (National Center for Educational Statistics, 2020b). It was reported in 2017, that 11% of SNAP and Medicaid recipients have bachelor’s degrees (Butcher & Whitmore-Schanzenbach, 2018). In 2019, 22.3 million people, of which 19 million are black, were in occupations considered “essential” and made less than \$15/hr (Kinder & Stateler, 2021). In 2019, 20% of healthcare workers lived below the poverty line. To decrease the inequality gap, it is imperative that everyone has access to affordable education.

According to the economist Joseph Stiglitz (2012), access to a good education in the United States is becoming increasingly dependent on the income, education, and wealth of one’s parents. Wealth has not increased for lower or middle-class families in the last two decades, despite the fact it is going up for the wealthiest (Pew Research Center, 2015). As Warren Buffett put it, “There’s been class warfare going on for the last 20 years and my class has won.” (Stiglitz & Bilmes, 2015). Stiglitz (2012) argued that the increasing financial inequality has led to less funding for education and that can be attributed to an even further widening of financial

inequality. It is like a downward spiral: as the wealthier a few become, the less they want public funding for the majority. Additionally, as students must take out student loans to fund their education, more predatory lending becomes involved including “loans to for-profit schools, without standards; loans that are non-dischargeable even in bankruptcy; loans designed as another way for those at the top to exploit those aspiring to get out of the bottom” (Stiglitz & Bilmes, 2015).

Adult Learners in Higher Education

Even prior to the global COVID-19 pandemic, online education had been steadily growing over the past 20 years, as it provides learning flexibility and increased access to a college degree (Seaman et al., 2018). The increased enrollment and growth were made possible because of technological advances such as high-speed internet, mobile devices, and a variety of online learning applications. These technologies were found desirable to early online institutions because they made online education equivalent to traditional learning platforms while providing a more affordable and easily accessible experience. In 2016, more than 15% of higher education students were enrolled exclusively in distance education colleges and universities (Seaman et al., 2018), and much of this percentage is comprised of non-traditional adult learners (Jaggars, 2012; Ortagus, 2017; Ortagus & Tanner, 2019).

These non-traditional and remote adult learners are more likely to be parents, part-time students, married, older, full-time employees, and have lower academic credentials as compared to their face-to-face peers (Timarong et al., 2003; Ortagus & Tanner, 2019). Ortagus and Tanner (2019) suggested that adult learners are attracted to online colleges and universities because “they appreciate the opportunity to continue their education amid hectic work and personal lives”

(p. 59). Non-traditional adult students face many external pressures that are not experienced by the traditional 18-24-year-old college student. Because of this, online college administrators and educators must provide a greater variety of services than traditional brick-and-mortar universities (Ortagus & Tanner, 2019). As such, at the onset of the global COVID-19 pandemic, distance learning colleges and universities already had in place the infrastructure, capacity, and ability to evaluate practices, monitor student progress, and provide student support services completely online (Ortagus & Tanner, 2019).

In an attempt to gain access to higher education and increase their human capital and access to education during their busy lives, many adult learners attend colleges and universities that are online. In 2021, 57% of online students reported that they were employed full-time (Hanson, 2021). The majority of low-income non-traditional students work in jobs that have been considered essential during the global pandemic (Butcher & Whitmore-Schanzenbach, 2018), thus increasing their exposure to the virus and potentially increasing their stress. Non-traditional adult learners who were enrolled in online degree programs during and prior to the global pandemic may have been in a better position to cope with the additional stress of the pandemic because their professors were able to deliver engaging materials more effectively and efficiently (Yang et al., 2021).

Adult learners are different from the traditional incoming freshman and generally are seeking to obtain a higher education degree or certificate to increase their immediate human capital with specific career goals (Knowles et al., 2020). Disproportionately, students from low-income families and underrepresented minorities are enrolled in public 2-year degree programs and the associated academic and cost-saving benefits may be particularly important for these students (Griffiths et al., 2020; Hanson, 2021). In 2021, 19% of online learners reported that they

were enrolled in a degree program so that they could advance in their current job (Venable, 2021), and because of this, it is of the utmost importance that institutions of higher education implement tools and technologies that ensure these students are successful and complete their degrees to assist in increasing their human capital. As Fullan and Scott (2009) pointed out, although there are a few positives from the traditional lecture model of higher education, it is not the most effective at training students to be advocates for change for themselves and in their communities.

In addition to economic barriers to education, adults striving to continue their education face challenges such as time constraints and family obligations (Fairchild, 2003). Adult learners are not only often working professionals, but they are also primary caregivers and often have families. According to Timarong et al. (2003), non-traditional adult students are likely to have one or more of the following seven characteristics: delay enrollment after high school in postsecondary education, attend part-time, are financially independent, work full-time while enrolled, have dependents other than a spouse, are single parents, or lack a standard high school diploma. Flint (2005) suggested that adult learners are different from younger students and what impacts their success is identified by the frequencies with which students are able to complete credit-bearing courses, accumulate specified levels of credits applicable toward certificates, earn academic credentials, and avoid academic probation or dismissal according to predetermined thresholds and time intervals.

Unfortunately, many institutions of higher education do not have the required support systems in place to ensure that non-traditional adult learners have access to ensure that predetermined thresholds can be successfully accomplished (Flint, 2005). The impacts of stressors on learning are complex. Stress has been reported of having both enhancing and

impairing effects on memory (Joëls et al., 2011). COVID-19 global pandemic has potentially increased the stressors, and added new ones, compared to prior to the pandemic. Many of the stressors reported that were associated with high stress and anxiety were a lack of financial resources, time conflicts, and job and family requirements (Fairchild, 2003).

Many community colleges strive to be accessible to all students and keep barriers to students of diverse backgrounds the ability to enroll (Eisenberg et al., 2016). However, in 2014 it was reported that on average only 20% of students that were first-time and full-time completed the credential they were seeking within 150% of the intended time frame (National Center for Education Statistics, 2014). Shapiro et al. (2012) reported that after an eight-year time span, 43% of students were no longer enrolled and had not earned a certificate or degree of any kind. Given adult learners have “already sacrificed” much to re-enroll in school, it is up to the college to provide as much support as possible to ensure the students are successful. To ensure success, institutions should rethink their assumptions about the best approaches to help students graduate (Fairchild, 2003).

Stress, anxiety, and depression can interfere with learning and student success (Joëls et al., 2011). There has been an increase in the number of U.S. college students reporting symptoms of anxiety and depression. In 2019, only 13% of graduate students in the U.S. reported having symptoms that were consistent with anxiety. In July of 2020, this rate jumped to 40%, and researchers attributed this to the Covid-19 pandemic (Langin, 2020). Because the pandemic is increasing stress and possibly changing the availability of traditional coping strategies (i.e., social gatherings, going to the gym), students might be experiencing additional stress that may be impacting learner outcomes. When a situation arrives that exceeds a person’s resources, stress

and anxiety can be experienced. Prolonged stress can have negative health consequences (Endler, 1997) and impact students' potential to learn (Vogel and & Schwabe, 2016).

One of the main regions of the brain that appears to be activated when mice and humans are exposed to stress is the amygdala (Knowles et al., 2020). This is an almond-shaped mass inside each cerebral hemisphere and is most associated with the term "fight or flight response" (Knowles, 2020). The amygdala may also play a role in a feedback loop in the brain that helps the brain decide what is important to remember (Joëls et al., 2011). The brain is incredibly complex and, in some cases, being exposed to stress resulted in increasing their ability to remember educational materials, but in others, stress has the opposite effect (Vogel & Schwabe, 2016). If stress occurs directly before learning, then the individual was more likely to demonstrate enhanced memory later. However, if the stress is experienced 30 min before learning, then memory recall was impaired. The brain did not evolve to learn classroom materials, it evolved to protect, hence the "fight or flight response" (Knowles et al., 2020).

Since the COVID-19 global pandemic, institutions around the world were forced to quickly pivot from traditional classrooms to an online learning environment. Lee & Lee (2021) suggested that institutions that had already adopted online technologies were in a better position to quickly disseminate engaging online learning materials and have not seen poor learner outcomes as a result of the COVID-19 pandemic. Unfortunately, many institutions of higher education in the United States have not yet embraced online learning, OER's, or asynchronous courses and therefore were not in the position to quickly adapt and distribute materials efficiently and effectively in response to COVID-19. This might in part be a cause of so many students reporting higher levels of stress and anxiety now as compared to before the pandemic (Yang et al., 2021). However, institutions of higher education need to use every tool possible to help

students gain access to affordable education. Although there has been a steady growth in the use of online materials and course delivery methods, the utilization of these technologies has been slow (Lee & Lee, 2021).

When the pandemic was declared, Keweenaw Bay Ojibwa Community College (KBOCC), as with many institutions, had to switch gears very rapidly to rely completely on and rework the functioning of the online platforms and Learning Management Systems (LMSs) that the educational institutions had employed prior to the global COVID-19 pandemic. Although these LMS's had been used prior to the pandemic, the use was superficial and commonly used as a way to track grades in science courses (Roth, 2022). Science courses are generally considered to be hands-on and require experience that can only be provided with expensive equipment and hazardous chemicals (Johnson & Gedney, 2001; Saunders & Klemming, 2003; Salter & Gardner, 2016; B. Beatty, personal communication, May 5, 2022; Roth, 2022), and thus cannot be completed online.

However, not all scientists work in a sterile or chemical lab, so this requirement is also artificial (Moore, 1990). With the sudden change to online platforms during the pandemic, many science instructors had to find a way, although challenging to employ their current science curriculum, to accurately assess student understanding of the material and whether the course objectives are truly being met (Al-Mawee et al., 2021). Some argued that this transition to online-only platforms resulted in worse outcomes (Bozkurt et al., 2020; Fanzeres, 2020; Burke, 2021), however, in some cases, learners did better during the pandemic than expected and knowledge acquired about what worked and what did not work should be used to inform best-practice moving forward, as online learning is “here to stay” (Camilleri, 2021).

Empirical data are needed to determine if the use of online asynchronous, synchronous, or HyFlex courses is capable of increasing adult learners' self-efficacy, and ultimately successful completion of courses and degrees. Analyzing data from faculty and administration regarding their perceptions and self-efficacy of implementing HyFlex courses may provide insight into the impact that these resources may have on student learning and overall satisfaction.

The HyFlex Model

In 2010, Dr. Brian Beatty coined the term HyFlex (Hybrid-Flexible). HyFlex is a teaching and learning modality intended to provide a more flexible environment. HyFlex allows students to determine how they will attend each class session. In the HyFlex model, students are self-directed in their instruction and the instructor develops the content and provides the delivery for in-class sessions in person, synchronously online, or asynchronously online (Kyei-Blankson et al., 2014). To date, there has not been published data regarding the implementation of a hands-on science class delivered utilizing the HyFlex delivery modality, however it is possible that HyFlex may increase access to STEM courses (B. Beatty, personal communication, May 5, 2022).

The HyFlex Model was developed at San Francisco State University in response to the need for graduate students to have more flexibility in how they attended courses (Beatty, 2019). As enrollment declined in traditional classroom courses, it was determined that the faculty needed to be more flexible with content delivery methods (B. Beatty, personal communication, May 5, 2022). A HyFlex (Hybrid Flexible) course is multimodal and student-centered (Beatty, 2019). Students choose how they will engage in class delivery of instruction: online synchronous, online asynchronous, or in person. Students may choose how to engage in course materials via different delivery methods from session to session (Kohnke & Moorhouse, 2021).

The HyFlex Model has gained in popularity since the global COVID-19 pandemic (Kohnke & Moorhouse, 2021; Rider & Moore, 2021). Although concerns have been raised regarding student communication in the classroom, students appear to appreciate the flexibility that the HyFlex Model provides (Kohnke & Moorhouse, 2021). As institutions of higher education strive to be equitable and culturally relevant, it is possible that the implementation of the HyFlex model may increase self-efficacy, student satisfaction, and overall retention and graduation rates in STEM degree programs.

Theoretical Framework. Andragogy

Knowles et al. (2020) defined andragogy as the art and science of helping adults learn. When adults are engaged in learning, are self-directed, and take the initiative to learn something, they are more likely to retain the material permanently (Knowles et al., 2020). In a traditional education setting, the learning concepts and activities are structured by the faculty, administration, and leadership. In this setting, the adult learner is told what to work on, what material and resources should be used and how to use them, and how success or mastery of the objectives will be evaluated (Knowles et al., 2020). This traditional structure conflicts with the adult learner's need to be self-directing and may in fact stifle or inhibit learning (Knowles et al., 2020). As Fullan and Scott (2009) pointed out, although there are a few positives from the traditional lecture model of higher education, it is not the most effective at training students to be advocates for change for themselves and in their communities.

College and university leadership and faculty are currently in a unique situation. Knowles et al. (2020) suggested that educators need to apply The Process Model, in which learning is self-directed, and this lends itself to life-long learning. It is becoming clear that the model of having

students sit at their desks and learn to take tests is not going to provide them with the skills that they need to be successful in a changing global economy (Knowles et al., 2020). Students will be applying for jobs that haven't even been thought of yet and school leadership should reimagine learning and optimize digital tools (Seemiller & Grace, 2016). Courses and curriculum should be descriptive, thus allowing for leadership to consider teaching trends, state and federal regulations, learning objectives, technology and visual elements to adapt quickly in the digital age and ensure every student succeeds ("How educators use technology", n.d). Stabback (2016) argued that curriculum bridges the gap between education and development and should include the competencies associated with lifelong learning. If the Process Model is at the center of the curriculum, self-improvement is at the heart of learning (Knowles, 2020).

Unfortunately, teachers themselves may not possess the skills they should be teaching (Zipke, 2018), and they may not be lifelong learners. It has been suggested that the U.S. system of educators is lacking because "it produces narrow intellectual specialists.... because it encourages dilettantism and inadequate depth." (Taylor, n.d.). This has created challenges for educators, not only as continuing training for seasoned teachers (Meador, 2019), but many of the new teachers (while in college either as an undergraduate or graduate students) are not being taught a broad enough range of skills needed to train students in the digital age (Zipke, 2018). As stated by Knowles et al. (2020), organizations that are innovative are more successful than those that are unwilling to change and adapt. If they are not willing to change and are not flexible, they will not be successful. The question shouldn't be how to bridge the gap between the interests and engagement of adult learners and educational institution administration desires, but rather the questions should be how to convince educational institutions that teaching and learning methods

of the nineteenth century are not working for adult learners in the twenty-first century (Knowles et al., 2020).

Miller (2011) pointed out that teachers need to have the ability and flexibility to adjust their teaching style for the learning style to the students. Teachers are now delivering course materials through video conferencing, videos, and Learning Management Systems (LMS) (Truong, 2020). However, not all students have access to the internet to access the materials. Delivery of the curriculum in a virtual setting has exposed the reality of the economic gap and the digital divide (Desilver, 2020). The new teaching response has been described as 'Panic-gogy' (Kamenetz, 2020). Many leaders have realized that the curriculum philosophy must be flexible during the “new normal”. To meet the major components of the curriculum, many teachers have moved the course objectives, content, and assessments into LMS platforms. Leaders have encouraged teachers not to be concerned with creating the perfect virtual class, as creating an online course with components linked to learner outcomes can take months (Kamenetz, 2020). In addition, not all teachers are tech-savvy and there is great concern that even with support from leadership, already disadvantaged students will fall behind (Goldstein, 2020).

It has taken decades for institutions of education to embrace and employ technologies and change the way they approach teaching adult learners. These have become even more evident as the global pandemic forced students of all abilities out of the “traditional” classroom and into the online learning environment. Bain (2004) suggested that the best teachers respond with sympathy when encouraging the intellectual and emotional development of students. Given the global pandemic, educators shouldn't be so focused on traditional deadlines and past “set in stone” requirements, but rather they should be focused on how they can help their adult students

be successful despite the fact that many of them are facing new and unpredictable challenges almost every day.

Long-term Economic Impacts of Pandemics

The global COVID-19 pandemic of 2020 disrupted every aspect of daily life. In the spring of 2020, all non-essential businesses were required to close and shelter-in-place orders were issued (CDC, 2022). In response to this many institutions of higher education hastily transitioned traditional teaching lectures to synchronous online lectures with the hope of keeping students engaged and improving student outcomes (Themelis & Sime, 2020). However, the educational system in the United States was heavily criticized for the “hazard” crisis transition that occurred and successful student outcomes were being questioned (Bozkurt et al., 2020). Lee and Lee (2021) suggested if institutions of higher education had already embraced the use of online technologies, it is possible that student success will not be in jeopardy as a result of the global pandemic, however, we have yet to evaluate the success of educational outcomes at this time.

Historically, pandemics that result in high mortality are correlated with a loss in national and global GDP and have also resulted in a loss of human capital. The flu epidemic of 1918 killed about 675,000 in the United States (Centers for Disease Control and Prevention, 2021a), lowered GDP by 6% and consumption by 8%, and this also led to an increase in long-term poverty (Barro et al., 2020). High mortality was experienced during the 1968 H3N2 Influenza pandemic. Approximately 100,000 people died in the United States (Centers for Disease Control and Prevention, 2021b), consumption and productivity were reduced by 1.9%, investments by 1.2%, and productivity by almost 2% (Jinjarak et al., 2022).

In the pandemic of 2020, the United States had the highest number of documented COVID-19 cases of any world country, with almost 90M confirmed cases in June 2022 (Centers for Disease Control and Prevention, 2022). The United States also had the greatest death toll in June 2022, with over 1M being reported. At this time there were almost 20M students enrolled in American colleges and universities (National Center for Education Statistics. 2020b), and institutions of education moved to remote learning in order to continue to provide services.

Bozkurt et al. (2020) suggested that the United States pivoted from traditional education methods to remote learning in a misguided and haphazard way and that the desire to replicate on-campus learning experiences and hold synchronous online classes was unnecessarily taxing for both the teachers and the students. With the acknowledged challenges in transitioning from the classroom to remote learning, many colleges and universities chose to give students the option of earning a Pass/Fail grade, rather than a traditional letter grade. This option, however, comes with the caveat that courses completed with a P/F grade may not count toward their final degree requirements or may not transfer to another institution (Bozkurt et al., 2020). If this is the case, the students were not any closer to completing their desired degrees and may have ended up having to pay more for additional coursework to be successful. Bozkurt et al. (2020) stated many concerns with the current state of the higher education system in the United States, but under the global COVID-19 pandemic these concerns have become even more apparent and with the lack of embracing technological learning solutions, such as completely asynchronous online learning prior to the pandemic. This lack of forward-thinking “has led to an often-problematic learning experience, adding to [students] stress and trauma” (p. 95).

Inclusion and Cultural Competency

Inclusion can be defined as tackling and overcoming the intended or unintended patterns of marginalization toward students that have traditionally been excluded (Friend & Bursuck, 2019). One of the most important core principles for inclusion states that students have the right to nondiscriminatory evaluation. This requires that all evaluations cannot be designed that discriminate on the basis of race, culture, or disability. Teacher education and development programs play a critical role in helping new and seasoned teachers develop a deeper understanding of culture, race, sexuality, and gender identities, and ability. In addition, there are moral obligations to counter bullying, oppression, and racism (Friend & Bursuck, 2019).

Despite the calls of scholars, businesses, and societies for centuries to update the curriculum and make education equal and meaningful to all individuals, there remains an economic and racial gap in education (Glatthorn et al., 2019). On May 17, 1954, the Supreme Court ruled that "separate but equal" segregation in public schools was illegal, however, even without the global coronavirus pandemic, the majority of students who successfully complete school will be white, and from more affluent families (Brownstein, 2014). Racial and economic gaps are becoming bigger, as it is estimated that three-fourths of African Americans and two-thirds of Hispanics are enrolled in schools where a majority of the students qualify as low-income (Brownstein, 2014).

Inequality persists in education and the current national curriculum isn't inclusive. This is evident from assessments conducted from 2009-2019. During the last ten years, test scores for the lowest-performing 10% of students in the nation have significantly declined, while the scores have significantly increased for the highest-performing 10% (Wilburn et al., 2020). To aid in leveling out this disparity, it has been suggested that student success needs to be reconsidered

and redefined. This may be even more important for Tribal Colleges and Universities, as the reintroduction of Native language and culture should be a measurement of student success (Tribal Colleges and Universities, 2022). Traditional measurements of success often focus on outcome-based metrics (i.e. grades, academic performance, degree completion), but do not include purpose, persistence, or overcoming adversity (Chang and Smith, 2008; Brave Heart et al., 2011; Blessinger and Cozza, 2016).

Ladson-Billings (1995) and Howard (2010) both made arguments for the importance of training teachers to be central principles of culturally relevant pedagogy. However, Brave Heart et al. (2011) suggested it is not enough to provide inclusion and cultural in the pedagogy, but that that measurements that used to assess student success need to be reimagined, just as teaching does. State and national assessments are administered to students every year, and the results of these assessments are linked to funding for school districts (Manning, 2019). However, data suggests these assessments are not valid.

Over the last ten years, national K-12 scores on these assessments (Wilburn et al., 2020) and high school students' SAT and ACT scores have been declining (Chen, 2018). This suggests that the assessments may not accurately measure student success or that students are not prepared for college after graduation from high school. However, these scores are frequently used as a measurable outcome and included as an objective of the curriculum by school leadership (Sorenson & Goldsmith, 2018). Adichie (2009) warned that there is not just one story for everyone. The student is not simply a product of the surroundings and educators need to consider many different external factors, i.e., whether or not they had breakfast, got in fight with friends or family, or is having an otherwise good day (Nieto, 2012). As Nieto (2012) pointed out,

students are complex and come to school with so much more than just their background, culture, and race.

Each student has unique needs and if educators treat them all as individuals and find them where they are, there is potential for them to be more successful in their goals (Nieto, 2012). This is not only true for younger learners, but also for adult learners, as adult learners are not only coming into the classroom with their personal stressors, but potentially also that of their family members, co-workers, and community (Knowles et al., 2020).

Historical Trauma and Indigenous Higher Education

Indigenous people in North America face many emotional challenges, including “depression, substance abuse, collective trauma exposure, interpersonal losses, unresolved grief, and related problems within the lifespan and across generations” (Brave Heart et al., 2011, p. 282). The alcohol-related death rate is estimated to be five times higher for Indigenous people than for white people and the suicide rate is 50% higher than the national average in the United States (Brave Heart et al., 2011). Indigenous communities experience elevated morbidity and mortality rates, lowered life expectancy, and higher accidental death rates (Brave Heart et al., 2011). Evans-Campbell (2008) suggested that multilevel assessment and intervention strategies are needed to address historical trauma and improve individuals, families, and communities for Indigenous people.

Obiakor (2019) states that we must learn from our mistakes, that silence is not the answer, and that the overarching goal of higher education should be to solve social and economic issues and confront what divides us and stops us from achieving the goals. However, for far too long Indigenous Americans in the United States have been “left behind” in our education system.

From the first European settlers until the Native American rights movement in the 1960s and 1970s, Native American children were taken from their families and forced to assimilate into Western Society (Mizutani, 2018). This practice is now recognized as inappropriate and unjust. Many institutions of higher have made attempts to make schools more culturally relevant, welcoming, and lower the barriers that prevent Indigenous American students from obtaining a degree in higher education (Evans-Campbell, 2008; Brave Heart et al., 2011; Mizutani, 2018). Indigenous American students are not only aware of the importance of obtaining a degree from a college or university, but as a way to help their communities achieve economic equality (Mizutani, 2018). Despite this desire, Indigenous American students represent not only the smallest minority group in colleges and universities in the United States but also in the international student cohort (Lopez, 2020).

One of the fastest-growing industries that require a higher education degree is the healthcare profession. Prior to the global coronavirus pandemic, there was already a nursing shortage in the United States, and it is anticipated that the Registered Nurse (RN) workforce will increase by 15% by 2030 (American Association of Colleges of Nursing, 2020b). Given this projected growth and need, many states and health departments are offering incentives for people to earn an RN degree. The American Association of Colleges of Nursing (AACN) launched an initiative in 2010 to ensure that every college seat in the nursing department is filled with students (American Association of Colleges of Nursing, 2020a). Despite this overwhelming need, Indigenous American students are not applying or being admitted into RN programs. Indigenous American students stated the major reasons why they were not considering higher education, and specifically RN programs, were that they hadn't been taught about this potential career field, they were inadequately prepared to apply or enter a high education program, and

they were concerned about racism, discrimination, and stereotyping outside of their tribal lands (Chapman, 2011). There is a clear need to recruit and retain Indigenous American nursing students. In 2011 Indigenous Americans were reported to be the least represented of all minorities in nursing, only comprising 0.3 percent of all nurses, but Indigenous Americans represented about 1 percent of the United States population (Chapman, 2011).

Fish and Syed (2018) suggest that fundamental changes are needed to the way Indigenous American students are educated. For example, in 2009, 43% of Indigenous American students who started college in 2003 did not complete their degrees and were no longer enrolled. For many minority students, college can be very isolated and create feelings of loneliness and depression, which may be even more so for Indigenous American students (Fish & Syed, 2018). Chapman (2011) suggests that Indigenous American youth needs to be exposed to Indigenous American adults that hold positions of leadership, for example, RNs, and have mentors available on college campuses and universities to help them navigate and be successful.

The current system is not only perpetuating social inequality, but as students graduate and enter the workforce, they don't have the skills required to interact with people who are different from themselves. This can be seen in the healthcare profession, as there is ample evidence that implicit bias has created a health gap for Native Americans, Hispanics, blacks, and LGBTQ individuals (Thomas & Booth-McCoy, 2020). Data suggests that medical students enter school with these implicit prejudices and stereotypes, and these biases are being reinforced, but they are not being taught the skills needed to identify or address them (Stone et al., 2020). Although it is possible that admitting more students from underrepresented groups may subject them to racism and discrimination from their peers, White (2018) suggests that universities and colleges need to bring students together from different backgrounds to have conversations about race and culture

and act as an “intervention catalyst” to promote meaningful change. Thomas and Booth-McCoy (2020) report that medical students are now being trained to recognize when they are making assumptions based on race, culture, and sexuality with positive results. They also recommend the admittance of more Native Americans, Hispanics, blacks, and LGBTQ individuals into medical degree programs, as these students may have direct personal experiences with being treated poorly or as medically incompetent previously by providers, thus increasing patient care and potentially helping their peers as they are working towards their degrees.

It is estimated that between 75-93% of Indigenous students who are enrolled in a higher education degree program will leave college without completing a degree (Shield, 2004). The Indigenous student dropout rate is almost twice the rate of white students, with Indigenous female students having the highest dropout rate of any other group in the United States (Shield, 2004). Despite the research being limited regarding Indigenous student perspectives, as compared to other groups, colonialism and microaggression are extensively experienced and are reported to impact degree completion (Steinman & Kovats Sanchez, 2021). In an effort to increase access to culturally relevant and community-centered higher education and increase the retention and success of Indigenous students, the United States has committed to improving educational opportunities for students at Tribal Colleges and Universities (TCUs) (Tribal Colleges and Universities, 2022). There are currently 32 fully accredited TCUs in the United States and many of them have received federal funding to improve STEM courses, access to digital tools, and online education (Tribal Colleges and Universities, 2022).

Distant Education and Online Learning

Although online education has gained popularity over the last few decades, distance education is not a new phenomenon. The United States Postal Service was created in the year 1775 and by the mid-1800s mail was reliably delivered across the country, including to Hawaii and Alaska (United States Post Office, 2019). This created an opportunity for learning materials to be delivered to students and the first correspondence class was started (Matthews, 1999). In 1840, Sir Issac Pitman, the English inventor of shorthand, started delivering instruction materials by mail. Students would complete assignments, send them back to him for grading, and upon successful completion of the coursework the students earned a certificate of expertise in shorthand (Pregowska et al., 2021). This method of learning became extremely popular and in 1873 the first correspondence school was founded in Boston, Massachusetts. “The Society to Encourage Studies at Home” was tailored toward women who came from different socio-economic backgrounds.

The popularity of distance education continued to grow and as new technologies were invented, new educational opportunities were realized. In the 1920s, the invention of the radio allowed academic institutions to transmit lectures, and for over 80 years the radio was used for many different applications including school broadcasting, teaching adults how to read, basic adult education, and delivering news and other printed materials that were hard to obtain, especially in rural areas (Pregowska et al., 2021). Although there were many attempts to use television in distance education starting in the 1930’s, it was not the most reliable delivery method, especially in rural areas (Schlosser & Anderson, 1994). As satellite technology became cost-effective and more available, many projects were launched with the goal of providing educational materials. In 1980, one of the most successful was a state-funded satellite television

educational program, Learn/Alaska, which offered six hours of instructional television daily to over 100 villages, some accessible only by air (Schlosser & Anderson, 1994).

The goal of distance education has always been to provide accessible educational materials, no matter where the student is, and to extend the traditional university beyond the problems of scarcity, exclusivity, and location (Matthews, 1999). The invention of personal computers changed distance education forever and made it even easier for educators to deliver materials. The first computer network that was dedicated to education was created at the University of Illinois in the 1960s. It was named Programmed Logic for Automated Teaching Operations (PLATO) and consisted of computers that were distributed throughout the campus. Eventually, the system was expanded and was connected to a high school in Illinois (Schlosser & Anderson, 1994; Sarkar, 2020; Pregowska et al., 2021). In 1989, the University of Phoenix launched the first fully online undergraduate and graduate program (Schlosser & Anderson, 1994; Sarkar, 2020; Pregowska et al., 2021), and since that time many others have followed suit. In 2016, almost 15% of college students in the United States were enrolled in distant-only education programs, of which 22.4% of students are enrolled in “The Top 50” institutions that deliver materials online (Seaman et al., 2018).

There are significant start-up costs associated with starting an online degree program (Ortagus & Tanner, 2019). As a result of the global pandemic and school closure, most institutions have reported revenue losses from tuition and housing revenue and eighty-seven percent reported additional losses due to auxiliary services revenue that includes revenue from athletics, theater events, catering, rented space for non-college-related events, and wide range of college activities that supplement income (Whitford, 2021). In addition to the loss of revenue, institutions had the increased expense of quickly implementing an online delivery infrastructure

(Whitford, 2021). The global pandemic has created a situation in which colleges and universities must make up for a loss of revenue and increase in expenses, potentially by increasing tuition.

The use of online technologies in higher education is not new. With new technologies and more students taking online classes, the demand and use of asynchronous tools are becoming more widespread, especially during the global pandemic as essential workers attempt to maintain a work-life balance (Singh et al., 2021). In 2002, the United Nations Educational Scientific and Cultural Organization (UNESCO) investigated the impact of open course material for higher education in developing countries and coined the phrase "Open Education Resources" (Goldberg, 2001). UNESCO (2002) defined Open Educational Resources (OER's) to be "the open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes" (p. 24).

After that, the OER movement was started with initiatives funded by the Bill and Melinda Gates Foundation, Hewlett Foundation, Carnegie Mellon, and individual governments (Hilton et al., 2013). Massachusetts Institute of Technology Open Course Project, launched in 2001, is considered one of the pioneer projects of the OER movement in higher education in the United States (Goldberg, 2001). The intent of this program was to provide an education that was free, accessible, and open to anyone in an online format (Goldberg, 2001).

Open Educational Resources

Access to education is a critical component of society, especially for a healthy and strong democracy (Faulkner, 1959; Bethune, 1999; Saltmarsh & Zlotkowski, 2011). However, for higher education to help build a strong democracy, earning a degree must result in an individual earning higher wages and having the ability to be socially mobile (Acemoglu et al., 2018).

Because of this role, and as the cost of higher education continues to increase, there is an expanding desire for institutions of higher education to find creative ways to bring down costs (Loveless, 2015). From 2002 to 2012, the cost of textbooks increased by 84%, which is three times the rate of inflation (Grasgreen, 2019). As a result, many students are having to choose to take fewer classes, which can delay or prevent graduation altogether (Grasgreen, 2019).

One tool that colleges can implement to circumvent these issues is to use OER's. In 2012, OpenStax began publishing peer-reviewed, openly licensed textbooks. These textbooks are available in free digital formats, which can be read online through their website, Kindle, or iBooks, be downloaded or purchased in print for less than \$30 (OpenStax College, 2018). OpenStax is a nonprofit educational technology initiative based at Rice University. The researcher for this investigation completed an internship with the biology research group as part of her doctorate requirements in 2019 and continues to volunteer as a Subject Matter Expert (SME). Research at OpenStax is ongoing regarding adaptive courseware based on machine learning. Utilizing OpenStax and other OER materials in a science HyFlex class may enable the utilization of free or low-cost tools to have an increased self-efficacy to students during challenging times such as a pandemic that may translate to learning in a healthy environment (OpenStax College, 2018).

In the past few years, the OER community has grown quickly and there are now openly licensed educational resources freely available online under intellectual property licenses through Creative Commons (Jung et al., 2016). Although the Creative Commons licenses permit the free use and repurposing of OER's, not everyone who creates OER's licenses them through the Creative Commons process, as such there can be confusion as to whether material is an OER. Cronin (2017) defines an OER as "a broad descriptor of practices that include the creation, use,

and reuse of open educational resources as well as open pedagogies and open sharing of teaching practices" (p. 16). Teräs et al. (2020) cautioned that educators need to carefully consider what online technologies are implemented and suggested that utilizing corporate ed-tech platforms could lead to a dehumanization of education. Although redesigning a traditional textbook class into an OER course is time-consuming, many professors reported that they felt the OER courses were more engaging and relevant (Griffiths et al., 2020). Lowering the cost of materials and creating relevant and timely concepts are valuable tools that can enable adult learners to be successful in post-secondary studies (Knowles et al., 2020). Online education is not a passing phenomenon and with the continuation of the global COVID-19 pandemic, it is necessary to understand what online technologies are most effective and ensure all students will be successful.

Although there has been a steady growth in the use of online technologies, it is unclear if they are increasing student success. During the global pandemic, there has been an increased desire from instructors, leadership, and institutions of higher education to implement online courses with a dynamic learning environment, in an attempt to increase education equity and decrease the negative impacts that the global COVID-19 pandemic has had on the United States' educational system (Burke, 2021). COVID-19 revealed many shortcomings in how online learning has or has not been implemented in educational institutions. Teräs et al. (2020) cautioned that free platforms must be carefully evaluated, as there is a potential that student rights and privacy may be violated and that this can lead to new forms of student inequity and inequality. Despite the potential of higher college dropout rates and lower enrollment numbers of incoming freshmen into institutions during the global pandemic (Fanzeres, 2020), there is potential for institutions of higher education to ensure student success.

Self-efficacy in Higher Education

Self-efficacy can be defined as a person's belief that they are capable of achieving goals (Crain, 2021). For example, if a student has high self-efficacy in science, the student will be more likely to believe that they will be successful in advanced science subjects. To help increase a student's self-efficacy, short-term and attainable goals should be set. Students should be allowed to participate in self-regulated learning and set their achievement goals. Intuitions of higher education can undermine the development of self-efficacy if the culture and background of the student are not respected and incorporated into the learning environment (Crain, 2021). If a student develops an authentic sense of efficacy, then the motivation to continually learn and challenge themselves is present. These self-challenges may not always revolve around academic achievements.

Not only do Indigenous students have to cope with historical trauma, but there has been an increase in reports regarding the incidences of missing and murdered Indigenous People, especially among the female population (United States Government Accountability Office, 2021). As more students speak up about the abuse they are experiencing, it is possible that their perceived coping self-efficacy may help them recover faster and suffer less from post-traumatic disorders (Benight & Bandura, 2004). To help with a student's perception of coping and self-efficacy, the development of self-regulation skills should be encouraged. Helping students to feel capable of establishing a plan of action, assessing the positive aspects of the situation, and feeling empowered enough to seek advice and emotional support from other people can help foster self-efficacy (Freire et al., 2020). These skills can help students respond in a more positive and protective approach to any demand or stress that they are comforted with, inside and outside of the classroom.

Self-regulated learning can be defined as the ability to control one's learning environment. It includes self-assessment, independence, active learning, managing and coordinating plans and decisions, and self-assessment. An example of self-regulated learning is when students are engaged in solving real-world problems. These projects are not teacher-led, but teacher-supported. All subjects should be taught with enthusiasm and purpose. As Bransford et al. (2000) pointed out, the most successful classrooms are student-centered, include academic dialog, and when the students are having so much fun that they don't even realize they are learning. Moore (1999) suggested that part of the problem with the United States education system is that educators convey more information than understanding. Shulman (2017) suggested too much emphasis is put on the procedure of how lessons are taught and not on the content and argued that teachers need to develop general pedagogical content knowledge.

Developing pedagogical content knowledge requires that teachers themselves are lifelong learners. Shulman (2017) suggested that teachers must have content knowledge and knowledge of representations of the subject matter. However, they must also possess an understanding of students' conceptions of the subject and the learning and be able to adapt general pedagogical knowledge to teach "why it is worth knowing, and how it relates to other positions, both within the discipline and without, both in theory and in practice" (p. 9). Shulman (2017) also stated that the curriculum should be circular and laterally aligned with what students are learning in their other classes. In addition, learning doesn't only occur in the classroom and the lessons should be linked to the community at large (Jennings et al., 2005).

Moore (1990) suggested that the education system is failing students and warned that a lack of basic skills would be detrimental not only to individuals but to society as a whole. Moore (1999) argued that the science curriculum should be incorporated into all subject matters. As

Bransford et al. (2000) suggested, good teaching starts with asking questions. Any question that can be asked can be answered with scientific reasoning. Teaching these skills to students not only helps them learn the subject matter but also can help foster self-efficacy. Instructors' self-efficacy, personal values, and goals play a key role in influencing positive learner outcomes, students' achievement and success (Barni et al., 2019).

Given the many challenges that the global community is facing, the education system might start empowering students to ask and answer questions, no matter the subject matter. Teachers should not consider that there is a difference between content knowledge and pedagogical knowledge but work to develop their pedagogical content knowledge (Shulman, 2017). Moore (1990) warned that students who do not have an understanding of the world around them will not have the skills needed to understand the real threats and challenges whether natural or man-made that humanity faces and that the goal of education should be preparing students to live in the world of the future. Incorporating culturally relevant knowledge and history into science classes and allowing for self-regulated learning may lead to an increase in self-efficacy and overall satisfaction in higher education online classrooms for Indigenous students.

Summary

At the start of the global COVID-19 pandemic, the world's societies closed businesses and in-person meetings, including meeting in schools. In order for schools and colleges to continue education, there was a rush to transform learning materials into remote, online formats (Bozkurt et al., 2020; Lee & Lee, 2021). As the global pandemic continues to mutate and disrupt daily lives, institutions of higher education need to determine what tools, materials, and technologies should be implemented to ensure student success. Flexible delivery methods of

educational materials may be critical for higher education to use during times of social disruption to ensure success for non-traditional adult learners. A paradigm has existed since the beginning of distance education, in which students want more flexibility, but institutions of higher education insist that the traditional methods of course delivery are the best. Regardless of this dichotomy, the global COVID-19 pandemic required institutions to embrace technologies and these technologies are likely to persist in education into the future (Yang & Huang, 2021; Santos & Pinheiro, 2022). To best serve students, it is imperative that the needs and perspectives of the learning community's leadership be evaluated, so that the tools and modalities that are available can be used to help meet their academic and personal needs, the students' needs, and inform on best practices (Santos & Pinheiro, 2022).

Chapter Three: Methodology

Lee and Lee (2021) suggested that institutions that had already adopted online technologies were in a better position to quickly disseminate engaging online learning materials and may not see poor learner outcomes as a result of the COVID-19 pandemic. On the contrary, students at institutions that did not implement such resources did not perform as well (Lee & Lee, 2021). Combining the best practices and what has been learned from the global pandemic may help create a situation where both teachers and students are prepared for the next COVID spike, a different pandemic, natural disaster, or other “act of God” (Beatty, 2019). The data, both qualitative and quantitative, will potentially provide insight and reveal faculty and administration perspectives and preferences regarding the phenomena of the HyFlex models on learning, the modes in which this can be delivered, and the modes that are used at courses taught at KBOCC.

Research Design and Procedures

A paradigm of distance education has seemed to exist since the inception of distance education, in which students preferred off campus opportunities, but faculty suggested learning could not be fully realized outside of the traditional colonial classroom (Yang & Huang, 2021; Santos & Pinheiro, 2022). This mixed-method study sought to understand how leadership at KBOCC preserves self-efficiency in the HyFlex learning environment and student success. This study also sought to gain insight into how leadership perceives other delivery modalities; and what, if any, lessons were learned during the global COVID-19 pandemic that may inform on best-practices to meet every student where they are and ensure degree completion.

Research Questions and Hypotheses

Data was analyzed that was collected during the Fall session at KBOCC. There are many factors that impact leadership self-efficacy and the administration and faculty experiences and

utilizing a mixed-method approach to understand the participants' experience and provided insight into tools and technologies that could be adopted to improve the adult non-traditional learners' learning outcomes and satisfaction.

Quantitative Research Question

What is the relationship between the perception of delivering online learning materials and faculty and administration self-efficacy and student learning, performance, and satisfaction?

The researcher proposed the following hypothesis:

The null hypothesis is that delivery modality has no impact on faculty and administration self-efficacy and student learning, performance, and satisfaction. Or the alternative being delivery modality had an impact on faculty and administration self-efficacy and student learning, performance, and satisfaction. If the being delivery modality had an impact on faculty and administration self-efficacy and student learning, performance, and satisfaction, the null hypothesis will be rejected.

Qualitative Central Question

The overarching research question guiding this study is: How does the HyFlex delivery method impact faculty self-efficacy regarding teaching? Sub-questions include:

1. How do faculty and administration perceive the advantages and limitations of implementing HyFlex courses?
2. How do the perceptions of delivery methods and satisfaction differ between faculty and administration?
3. How do faculty choose to deliver course materials?

4. How do faculty and administration perceive student learning, performance, or satisfaction with different delivery modalities?

Mixed Method Question

To what extent do the qualitative findings expand upon the quantitative results?

Instrumentation and Measures

Creswell (1999) suggested that a mixed-method research study is an effective way to gain insight into complex phenomena through the use of both numerical data and interviews. Because of the utility of combining both qualitative and quantitative data collection, the researcher used quantitative survey questions (Rota et al., 2021), along with open-ended qualitative interview question prompts (Appendix A-C). Results from the KBOCC leadership community informed on the advantages and limitations of implementing a HyFlex program as part of best practices that aim to achieve the goal of “improving the retention of students that are enrolled in the Health Science and STEM programs” at KBOCC (Roth, 2022).

Active Interviewer. The qualitative study applied the active interviewer methodology to generate participant questions and for data collection (Holstein & Gubrium, 1995). An interview is a social interaction and should not be treated as clinical interaction to elicit “truth”, but rather as narratives that are produced based on the personalities of the participant and interviewer that are present (Hathaway et al., 2020). The questions were written for the interviews that ask the participant for expansion and explanation as to why a particular response was given (Appendix C). As a member of the KBOCC community, the researcher acknowledged that there may be some challenges and opportunities faced with “insider knowledge” (Hathaway et al., 2020). The active interviewer methodology allows the researcher to be flexible, adaptable, and prepared to allow the narrative to organically form (Holstein & Gubrium, 1995) while maintaining the

researcher's ethical obligation to collect and describe the experiences of the participants in the most steadfast and truthful manner (Munhall, 2001).

Grounded Theory. Grounded theory dictates that the researcher tries not to have a preconceived idea of what the data will reveal and not attempt to force the data to fit previously defined theories (Strauss & Corbin, 1998). However, Charmaz (2006) suggested that the researcher is not a blank slate and is in fact part of the research. Grounded theory research is not based on a hypothesis that will either be proven or disproven, but rather it seeks to form a theory about a phenomenon from data that is collected, systematically coded, and categorized with the use of theoretical sampling and memoing until theoretical saturation is achieved. Charmaz (2006) also suggested that not only is the researcher part of the study, but the potential reader should also be considered as part of the research. As the researcher addressed the core characteristics of a grounded theory study, the researcher acknowledged that the data collected is subject to the perspective of the participants, ensured that their voices were reflected, considered the development of a substantive theory, with the reader deciding if it is transferable or applicable to practice (Charmaz, 2006).

The core characteristics of a grounded theory study can be visualized as a fluid and dynamic framework that can guide the data collection and analysis as a substantive theory is formed (Figure 1). Grounded theory asks the researcher to consider theoretical sensitivity as they embark on the data collection and analysis. Theoretical sensitivity is a concept that refers to the ability of the researcher to pay attention and be aware of the complexity and nuances of the participant's narrative (Strauss & Corbin, 1998). The use of memoing and recording notes throughout the data analysis process can aid in maintaining theoretical sensitivity (Charmaz, 2006). There are different approaches to a grounded theory study, and although some of the

approaches suggest that the literature should not be considered until after a substantive theory has emerged from the saturated data, it is possible that the literature can inform and provide context for the sample population (Mills et al., 2006).

This research study modified previously published interview survey and interview questions to help maintain theoretical sensitivity and prevent, as much as possible, the researcher's voice and perspectives from being interjected into the questions or the subsequent coding and categorizing (Appendix A-D). After data collection, open coding and constant comparative analysis was applied until a core category is identified. Axial coding was used to consider the conditions, interactions, actions, and potential consequences of the codes and categories. Grounded theory allows for flexibility, with the use of memoing and theoretical sensitivity, to create and recreate diagrams, consequential matrices, and evaluate codes and categories until a storyline leads to the final grounded theory (Charmaz, 2006).

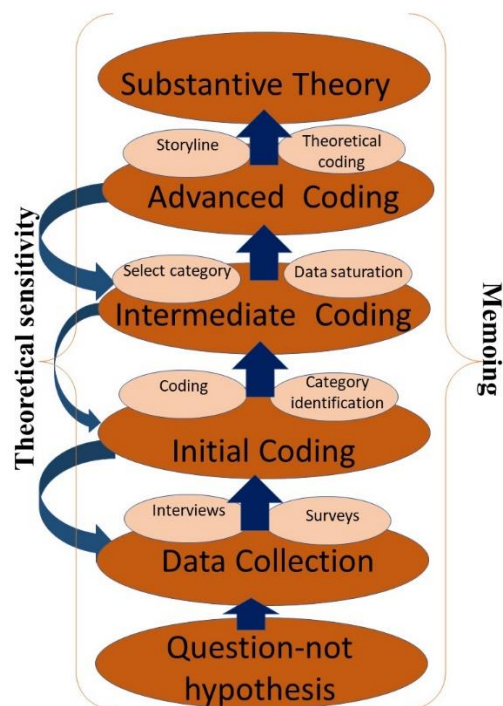
Very rarely does the correct coding happen the first time (Saldana, 2015). This study included several levels of analysis to identify categories and themes related to the relationship of the perception from leadership self-efficacy, satisfaction, and student needs. First, answers to questions from each of the six interviews were read and evaluated from a holistic, “grand tour” of the interview (Saldana, 2015, p. 48). During the second round of coding, InVivo Coding was applied, in which a word or short phrase were taken from the data of each interview. Between five and ten data points were identified from each interview, which resulted in 62 individual datasets. Constant comparison of interview data, memos, and notes allowed for seventeen distinct categories to emerge.

During the third cycle of coding, I constructed six categories and four subcategories (Appendix D). This coding system allowed for decontextualization of the data for each question

and associated codes. Finally, as these distinct categories and their subcategories were analyzed, through the coding system, constant comparison and development of the notes, and theoretical saturation one major theoretical theme emerged that addressed the central research question: How does the HyFlex delivery method impact faculty self-efficacy regarding teaching?

Figure 1

Simplified grounded theory methods and processes



Note: Adapted from the steps of coding as defined by Saldana (2015).

Context and Participants

The College. The Anishinaabe, “original person,” is one of the largest Indigenous groups in North America. Anishinaabe are known by different regional names, Chippewa, Ojibwa, Ojibwe, or Ojibway (Kozich et al., 2022). Keweenaw Bay Ojibwa Community College (KBOCC) is a tribal college located in L’Anse, Michigan (Figure 2). KBOCC is chartered by the federally recognized Keweenaw Bay Indian Community (Ojibwe: Gakiwe’onaning) and is part

of the historic Anishinaabe Lake Superior Band of Chippewa Indians. The L'Anse Indian Reservation is the largest and oldest reservation established in Michigan under the Chippewa treaty of 1854 (Keweenaw Bay Indian Community, 2022). According to the 2020 census, the population living on the reservation was 3,396 with a population density of approximately thirty-seven inhabitants per square mile (U.S. Census Bureau, 2020). The L'Anse reservation is remote and there is a lack of high-speed internet, broadband, and cell phone service (“Michigan Governor’s Office, 2022).

Figure 2

L'Anse Reservation



Note: The L'Anse Indian Reservation is located primarily in two non-contiguous sections (circled in red) on either side of the Keweenaw Bay in Baraga County in the Upper Peninsula of the U.S. state of Michigan. From 1880R L'Anse Reservation Locator Map.svg by awmcphoe under

the Creative Commons CC0 1.0 Universal Public Domain License available at https://commons.wikimedia.org/wiki/File:1880R_L%27Anse_Reservation_Locator_Map.svg

The college was developed under the guiding principle “that American Indian students deserve an educational system that is responsive to their needs and concerns” (Keweenaw Bay Ojibwa Community College, 2022). The core purpose of the college is to provide educational programs where students can “experience success and enhance their self-image, dignity, and independence while preparing for their chosen career paths” (Keweenaw Bay Ojibwa Community College, 2022). KBOCC operates under the mission:

Formed out of our American Indian identity, the mission of Keweenaw Bay Ojibwa Community College is to provide post-secondary education rich in Ojibwa culture, tradition, and beliefs that supports lifelong learning.

This mission will be accomplished by providing a professional, dedicated, open-minded, and enthusiastic faculty, teaching a challenging, intellectually rigorous, and relevant curriculum in a culturally sensitive environment that is safe and conducive to learning. (Keweenaw Bay Ojibwa Community College, 2020).

In the fall of 2022, the student population at KBOCC included 123 part time, 27 full time, and 34 high school/dual enrolled. The college is open to the public, but at the heart of the college curriculum is Anishinaabe culture. All courses taught at KBOCC must have course outcomes that are linked to a course Anishinaabe statement. For example, the Anishinaabe Course Content Statement for the Biology course class was:

Native American and Euro-American approach biological and ecological thinking differently. Ethnoscience and the traditional ecological knowledge is invaluable in preserving biodiversity and restoring habitats. In this course, you are encouraged to

consider the topics we are learning from a Anishinaabe perspective. Consider the Medicine Wheel, when there is balance, there is harmony, there must be balance in the four quadrants. Everything in the wheel has a relationship with each other. For each individual, community, ecosystem, and the Earth to achieve *Mino-bimaadiziwn* ("the good life"), there must be balance.

The Medicine Wheel is an important symbol and philosophy in Anishinaabe culture (Figure 3). The Keweenaw Bay Indian Community (KBIC) states that their belief is that healing and teaching are parallel (The Power of Traditional Ways, 2022). KBIC and The Power of Traditional Ways (2022) teaching include:

We have to take care of Aki (Mother Earth) or we will not have a home. We must all share in this responsibility. We need to make sure that Mother Earth and everything the Creator gave her will always be here for future generations. Each morning let us remember to greet our Grandmothers and Grandfathers whose spirits are in the many glories that surround us. They taught us, as they had been taught by their elders, how to take care of Mother Earth and each other.

The Seven Grandfathers Teachings

To take care of Mother Earth and the community of life, we need to remember the Teachings of the First Elder. The First Elder gave us the gifts of knowledge that he received from the Seven Grandfathers when he was a little boy. Each Grandfather gave him a great gift. One gave him the gift of **NIBWAAKAAWIN (Wisdom)**, and he learned to use that wisdom for his people.

Another gave the gift of **ZAAGIDWIN (Love)** so that he would love his brother and sister and share with them.

The third Grandfather offered the gift of **MANAADJITOWAAWIN (Respect)** so that he would give respect to everyone, all human beings, and all things created.

AAKODEWIN (Bravery) was the next gift, the courage to do things even in the most difficult of times.

A fifth Grandfather gave the boy **GWEKOWAADIZIWIN (Honesty)** so that he would be honest in every action and provide good feelings in his heart.

Another Grandfather offered **DIBAADENDIZOWIN (Humility)** to teach the boy to know that he was equal to everyone else, no better or no less.

The last gift that was given to the boy was **DEBWEWIN (Truth)**. The Grandfather said, “Be true in everything that you do. Be true to yourself and true to your people. Always speak the truth.”

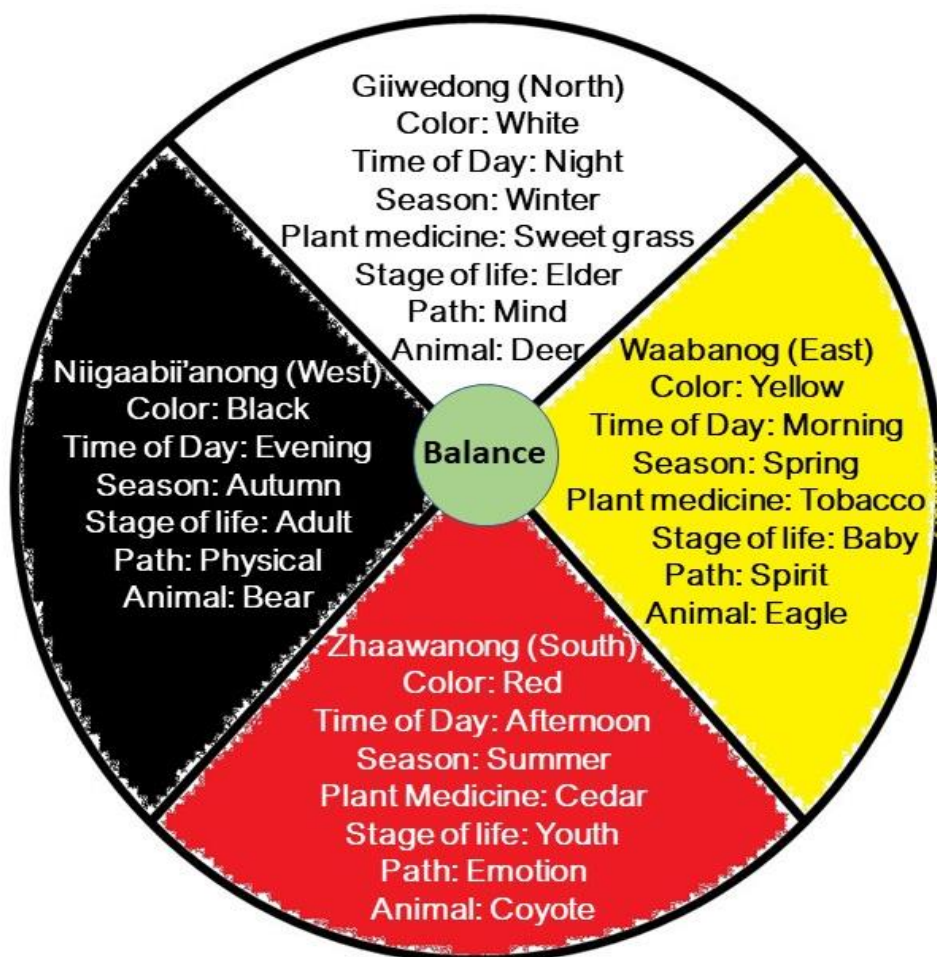
The Grandfathers told him, “Each of these Teachings must be used with the rest. You cannot have WISDOM without LOVE, RESPECT, BRAVERY, HONESTY, HUMILITY, and TRUTH. You cannot be honest if you use only one or two of the Teachings, and to leave out one is to embrace the opposite of what the Teaching is.”

We should all try to live by the Seven Grandfather Teachings. Sometimes it may be hard to apply all of them daily, but we must try. If we don't practice honesty, we cheat. If we don't practice truth, we will lie. We must go back to the knowledge that the Seven Grandfathers taught the First Elder, who then passed the Teachings on to the next generation, and so on.

The Seven Grandfather Teachings will remind us how to treat one another and our children. Each of us is responsible for taking care of the children and of Mother Earth. The children are the ones who must care for Mother Earth tomorrow, and for the generations to come (Author Unknown).

Figure 3

The Medicine Wheel



Note: This medicine was created based on the KBIC Medicine Wheel and embodies the various aspects that must be in balance. Movement in the Medicine wheel is circular and helps to align with the forces of Nature (KBIC Health System, 2022).

The faculty, staff, leadership, and students participate in research projects at KBOCC that investigate many diverse questions that integrate traditional teachings, the Anishinaabe worldview, and Western research methods. For example, an ongoing research project was started in 2015 that investigates the relationship between people, non-human animals, and plants in forested wetland communities in northern Michigan. The researchers apply the Anishinaabe environmental worldview as their guide, in which, “all of nature is sacred, its balance depends on proper relationships, and there are consequences for disregarding teachings about respect and reciprocity (Kozich et al., 2022 p. 33).” The research not only seeks to understand the complexity of the forest ecosystem and how it changes over time. But they also seek understand how the community of KBIC interacts with and perceives the ecosystem and how this relationship also changes over time (Kozich et al., 2022). Publications that have resulted from the long-term ecosystem study weave traditional Anishinaabe stories and narratives into the researchers’ interpretations of the collected data. For example, Kozich et al. (2022) included a story as retold by Jones (2013):

And then there is the next one. The cedar tree, that was another one that was asked, “How will you help the Anishinaabe?” Nanabosh asked. “Oh there are a lot of ways I can help the Anishinaabe,” he said. “When somebody has a child, when a couple has a child, they will use my wood to make the cradleboard,” he said. “I will give him all the love that I have to offer to the child. I shall bestow many visions onto him for the duration that he is in the cradleboard. And he

shall dream too. The child will have healthy bones, have a straight spine, strong and straight bones just be totally healthy if one uses the cedar. I have many uses that I can give them, when they want to make medicine from my being a tree. When someone is making a canoe that is one use that will be used to make the strips of cedar on the bottom when someone makes it. They can make a cedar bark covering for their shelter when they want to stay warm during the winter.” That is the one, the cedar bark, that will be utilized for a roof covering. And also these trees they will make other things like rice knockers, how it was said. This is where it will come from. “There are many ways I can help the Anishinaabe. I shall care for them too” (pp. 106-107).

Projects at KBOCC that incorporate traditional and western techniques provide students a unique opportunity interact with the community, elders, non-human animals, and plants as they seek to achieve balance and complete a degree in higher education.

Participants. To gain insight into the perceived advantages and limitations from a leadership perspective, participants were recruited throughout the KBOCC community. As an employee of KBOCC, the researcher was granted access to the campus, students, faculty, and administration. IRB approval was deferred by the University of Montana to KBOCC. IRB approval was obtained from KBOCC prior to data collection (Appendix E). Once permission was granted, a short survey was sent to seven department chairs, eighteen adjunct instructors, and five student service/administrators (Appendix A). In addition, participants were asked if they were willing to be interviewed. To increase participation in both the Likert scale and open-ended survey questions, instructors who participated were entered into a drawing to win a \$50 gift card. After data collection, one participant was randomly selected, and the \$50 gift card was delivered electronically.

To ensure the confidentiality of the participants, all data was stored on a local computer that is password protected. No identifiable participant data was included, and participant codes were used. Any data that could be attributed to a specific participant was removed from transcripts and coded data (Appendix D). Initial surveys were distributed to all participants confidentially and distributed through Qualtrics. Qualtrics access was only given to the researcher and no access was granted to anyone else.

A total of 16 questionnaires were completed by KBOCC leadership, faculty, and student support staff (Table 1). Among all the responders, 4 (25%) were in a position of leadership or student support, 6 (38%) were department chairs or full professors, and 6 (38%) were adjunct professors. Ethnicity was almost balanced with slightly more white participants, 9 (57%). A majority of females 11 (69%) responded. The majority of respondents, 69%, were under the age of 54. A total of 6 responders to the survey agreed to be interviewed (38%), of which 50% of the

participants self-reported as being American Indian or Native Alaskan/Other/Two-or more, and 67% were female.

Table 1

Academic role and demographic data-survey participants

Number of respondents	16
Academic role	
Administration and student support	4 (25%)
Department Chair/Full Professor	6 (38%)
Adjunct professor	6 (38%)
Gender	
Female	11 (69%)
Male	5 (31%)
Self-disclosed ethnicity	
White	9 (57%)
American Indian or Native Alaskan/Other/Two-or more	7 (43%)
Age	
> 45	4 (25%)
46-54	7 (44%)
< 55	5 (31%)

Survey Questions

Instructor questions were used from the “Satisfaction with online teaching” survey (Rota et al., 2021). The survey was modified to remove “math” from the online course description and the scale was changed from 0-10 (Appendix A). The survey began with an informed consent page (Appendix B) and was followed by demographic questions that asked participants for their name (for data matching), email address (to be entered into the \$50 gift card drawing), gender, age, and ethnicity. The survey ended with a question asking if the participant is willing to be interviewed. If the participant was willing to be interviewed, the researcher scheduled Zoom meetings and asked open-ended questions that followed up on the satisfaction survey.

The Survey was sent to One President, seven department chairs, eighteen adjunct instructors, and five student service/administrators (n=30). Sixteen surveys were completed (53%).

Data Analysis

Quantitative Data. Descriptive statistics were used to analyze the quantitative data. Because the number of participants was below twenty-five, no statistical analysis was performed on the Likert scale data. Because the number of participants was sixteen, the assumption requirements for valid statistical analysis were not met and therefore were not performed (Pallant, 2013). Descriptive statistics provided the frequency distribution percentages and measures of dispersion.

Qualitative Data

Interview Questions. Participants were interviewed via Zoom in the fall of 2022. Questions and the interview process were based on the Active Interviewer Methodology (Holstein & Gubrium, 1995). The researcher considered herself and the participants as equals during the interview process and allowed the participants to lead the narrative (Appendix C). The researcher interviewed six members of the KBOCC learning community. Prior to each interview, the participant was asked to read and sign a consent form (Appendix B). Six-1:1 Zoom Interviews (38%) were completed. Interviews lasted from approximately thirty minutes to an hour and half.

Interview questions included:

- How was your experience with online compared to traditional teaching?
- Have you used the HyFlex model or other multi-module delivery methods for any of your courses in the past?
- What do you see as advantages of HyFlex?

- What do you see as the limitations of HyFlex?

Transferability

Transferability assesses the degree to which the results of the qualitative study can be transferred to other people or environments. Specifically, this grounded theory study sought to provide a rich, thick description of faculty and administration experiences as related to the implementation of a HyFlex science course. The descriptions that were provided in this study will allow others to determine whether the phenomenon of perceptions, learning, and self-efficacy may transfer to other people or settings (Creswell, 1999).

Trustworthiness of the Data. In order to determine the transferability of the data, the trustworthiness of the information must be assessed. This is accomplished by the way in which researchers incorporate the accuracy and verification of the data in their study. Morse et al. (2002) suggested utilizing a number of verification strategies in qualitative research to evaluate reliability and validity throughout the qualitative research process. These strategies include investigator responsiveness, methodological coherence, theoretical sampling, sampling adequacy, an active analytic stance, and saturation. As Morse et al. (2002) stated, “these strategies, when used appropriately, force the researcher to correct both the direction of the analysis and the development of the study as necessary, thus ensuring reliability and validity of the completed project” (p. 17). To the extent possible, this study aimed to apply these strategies to ensure the trustworthiness of the data.

Accuracy

The current study incorporated standard methods of collecting data that are consistent with a grounded theory approach. In seeking to understand the phenomenon of the ability to allow students to choose how to attend a course from session to session impacts a leaderships’

overall satisfaction and self-efficacy within the course. Due to the limited number of participants in this study, interviews were a critical component of accurately ascertaining participant experiences and obtaining data saturation.

Verification

This study aimed to inductively analyze data through memoing, transcription, comparing data between participants, and continuously analyzing data to identify an emerging pattern. The collection and data analysis procedures used in this grounded theory study were derived from one-on-one Zoom interviews with participants, followed by the analysis of data through the triangulation process. It should be noted that the validation of obtaining and analyzing the data from this study may have included researcher bias. In grounded theory, researchers must allow for theoretical ideas to evolve during the course of the study rather than allowing for preconceived notions of the theory to enter into the process. In addition to allowing for theoretical ideas to emerge, the use of rich, thick descriptions from participant interviews and subsequent analysis of the interview data using triangulation may have moderated aspects of the researcher's bias

Summary

Access to affordable education is not just beneficial to the individual, but to the local and global society (Blessinger & Cozza, 2016). It is not enough for a student to be accepted into a higher education degree program, but they must be successful in their coursework and complete the degree for education to be meaningful and to increase human capital (Flint, 2005). This may be even more important in communities that have suffered from historical trauma and generations of poverty (Shield, 2004). No matter what the mode of delivery is, all stake holders must be comfortable and have self-efficacy that the courses can be developed and delivered

effectively. This study used a mixed-method design to investigate the relationship between leadership's self-efficacy and student satisfaction and success as it pertains to HyFlex modality. After data collection, open coding and constant comparative analysis were used until core categories emerged and a theoretical theme was identified. Responses to the interview questions were used to inform on the results obtained from the surveys, thus providing additional insight into the quantitative data.

Chapter Four: Research Findings

This study investigated the relationship between the perception of delivering online learning materials and faculty and administration self-efficacy and student learning, performance, or satisfaction. This mixed method study applied procedures that implemented qualitative and quantitative components subsequently, with the participants first completing the “Satisfaction with online teaching” survey (Rota et al., 2021). The last question in the survey asked if participants would agree to be interviewed by the researcher. This methodology allowed the researcher to gain insight and a more complete understanding of the perspectives regarding online teaching and learning and to and hear the voices of participants (Creswell, 1999). Mixed methods can help clarify contradictions between quantitative results and qualitative findings (Creswell, 1999). Through the use and integration of both qualitative and quantitative data, a richer interdependent analysis of the data provided insight into subtle nuances that were present (Guetterman et al., 2015).

Research Questions

It was widely reported that the transition to online learning during the global COVID-19 pandemic caused stress for both students and instructors and resulted poor student outcomes (Bozkurt et al., 2020; Bailenson, 2021; Burke, 2021; Camilleri, 2021). Learning what tools were useful and helped reduce stress and improve outcomes can help inform on best practices in the post-pandemic environment (Rota et al., 2021). This study sought to understand how the leadership at KBOCC perceives different learning modalities, their self-efficacy, and student success.

Quantitative Research Question

What is the relationship between the perception of delivering online learning materials and faculty and administration self-efficacy and student learning, performance, and satisfaction?

Qualitative Central Question

How does the HyFlex delivery method impact faculty self-efficacy regarding teaching?

Sub-questions.

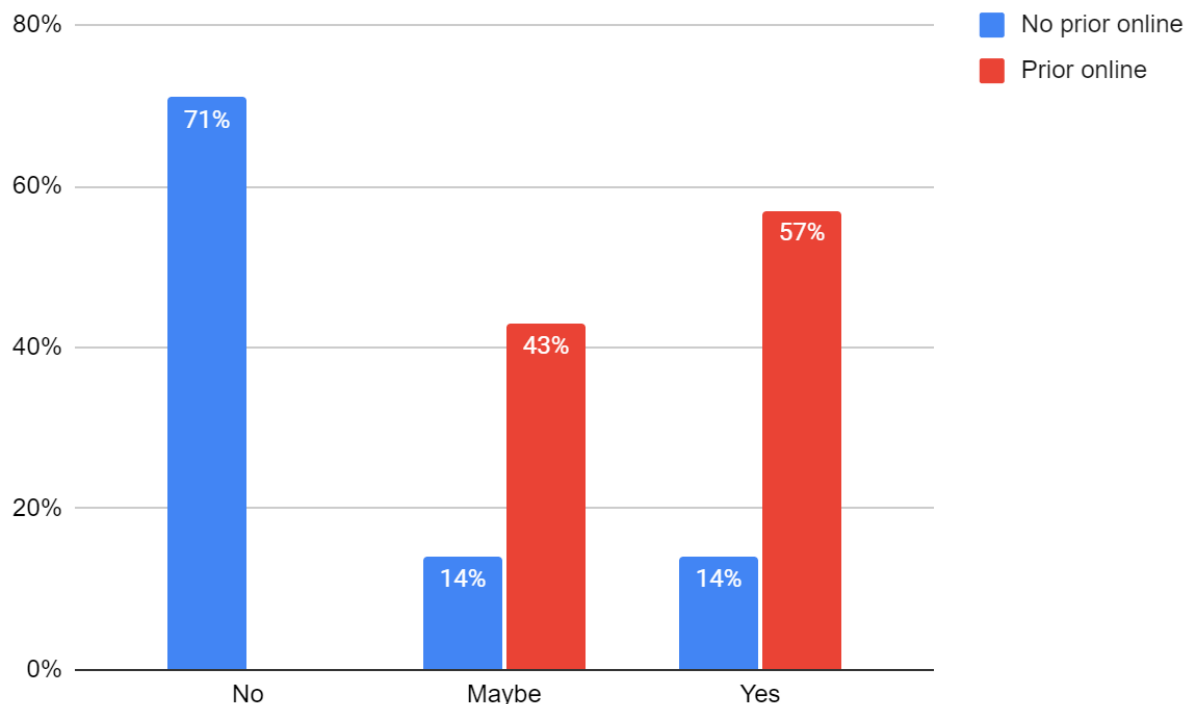
1. How do faculty and administration perceive the advantages and limitations of implementing HyFlex courses?
2. How do the perceptions of delivery methods and satisfaction differ between faculty and administration?
3. How do faculty choose to deliver course materials?
4. How do faculty and administration perceive student learning, performance, or satisfaction with different delivery modalities?

Integration of qualitative and quantitative data

Prior to COVID-19, 50% of respondents had not taught or participated in online classes, of which 71% would not consider teaching online classes in the future, and 14% stated maybe they would consider teaching online classes in the future (Figure 4).

Figure 4

Would you change the modality you used to deliver online teaching in the future?



Although participants that did not have online teaching experience prior to COVID-19 do not want to change their teaching modality, they reported high satisfaction with the online teaching experience, with 68% stating they enjoyed teaching online with a stratification score of 7 or higher (Figure 5). As Participant 6 stated, "Right now, teachers can decide how they deliver their courses. Not everyone likes teaching over Zoom. But if COVID comes back, we can quickly transition." Possibly, teachers without prior online teaching experience felt supported by leadership at KBOCC. As stated by Participant 6:

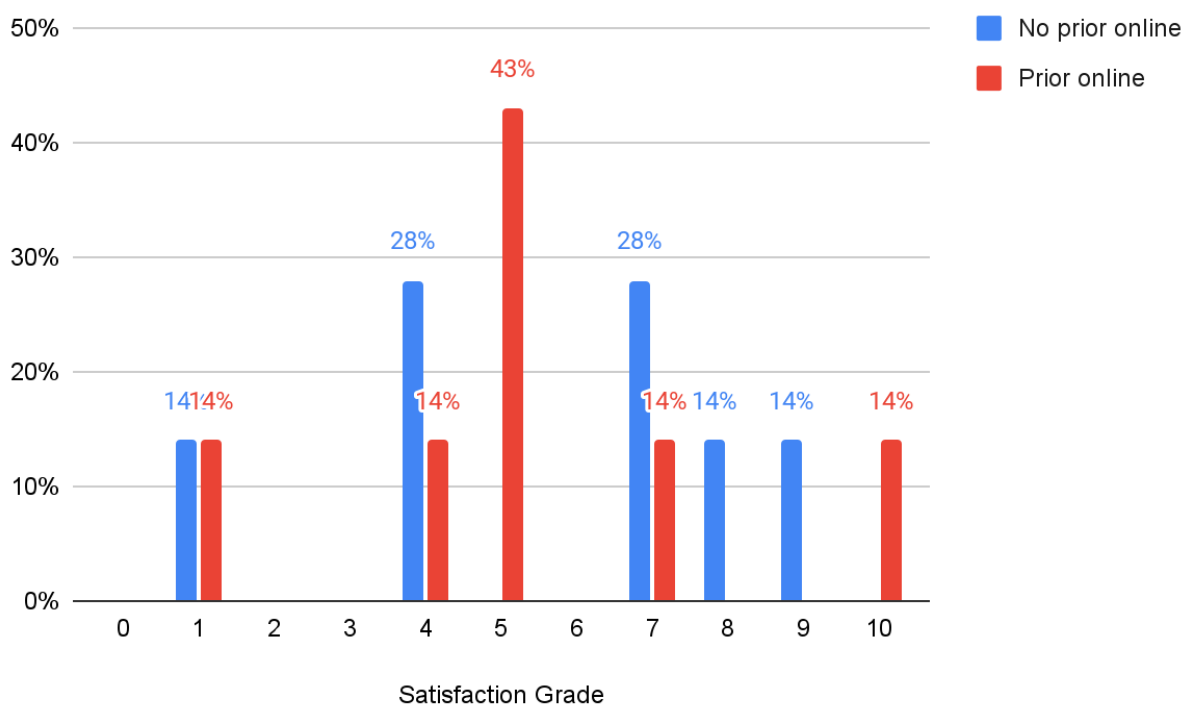
Policies for online teaching were in place. We didn't miss a beat. COVID has proven we can do it remotely. We were moving in that direction, but it would have been a slower transition. Just business was all online. We provide laptops and

hot spots. Before COVID, we never would have hired a professor from outside the state. Now we have hired people from different places and with different perspectives and insights, you can't move here for an adjunct position.

In 2019, prior to COVID-19, the college commissioned the Online Course Committee to create best practices and training for online instructors and students, which provided support. The college continues to include training and professional development opportunities to support faculty as new tools and technologies become available.

Figure 5

From 0 to 10, how much did you enjoy delivering online teaching?



The majority of participants without online teaching experience prior to COVID-19 consider online teaching slightly effective as compared to traditional classrooms (Figure 6). Fourteen percent of participants who had been teaching online prior to COVID-19 did not

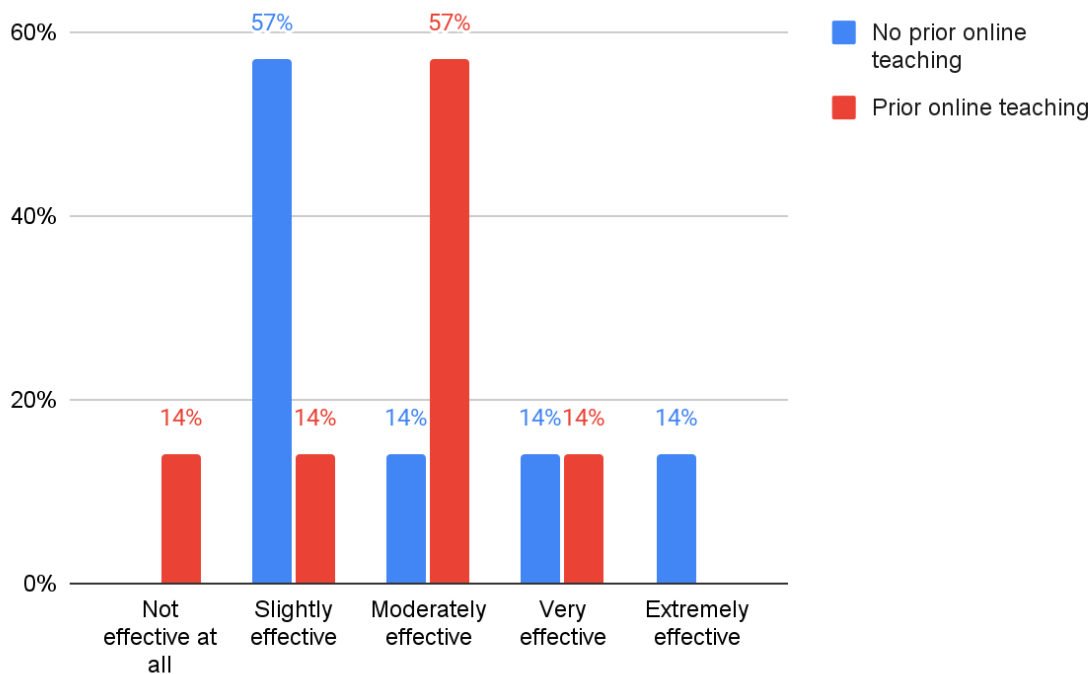
consider online teaching effective at all compared to a traditional classroom. This apparent contradiction may be in part explained by Participant 1, who stated:

I have been teaching online for [many] years. I was scared at first, but now it's nice... I like to celebrate my students' work, with everything in one place that we can share with everyone. It's a way we can document our success.... a tangible takeaway.... but in person I can read the room.... go with the flow.

The leadership that was interviewed are open to learning tools and technologies. Some of the respondents think that trying new tools in the classroom (either in person or online) shows that everyone is still learning and that even if it does not work perfectly at first, persistence is an important skill.

Figure 6

How was your experience with online compared to traditional classroom?



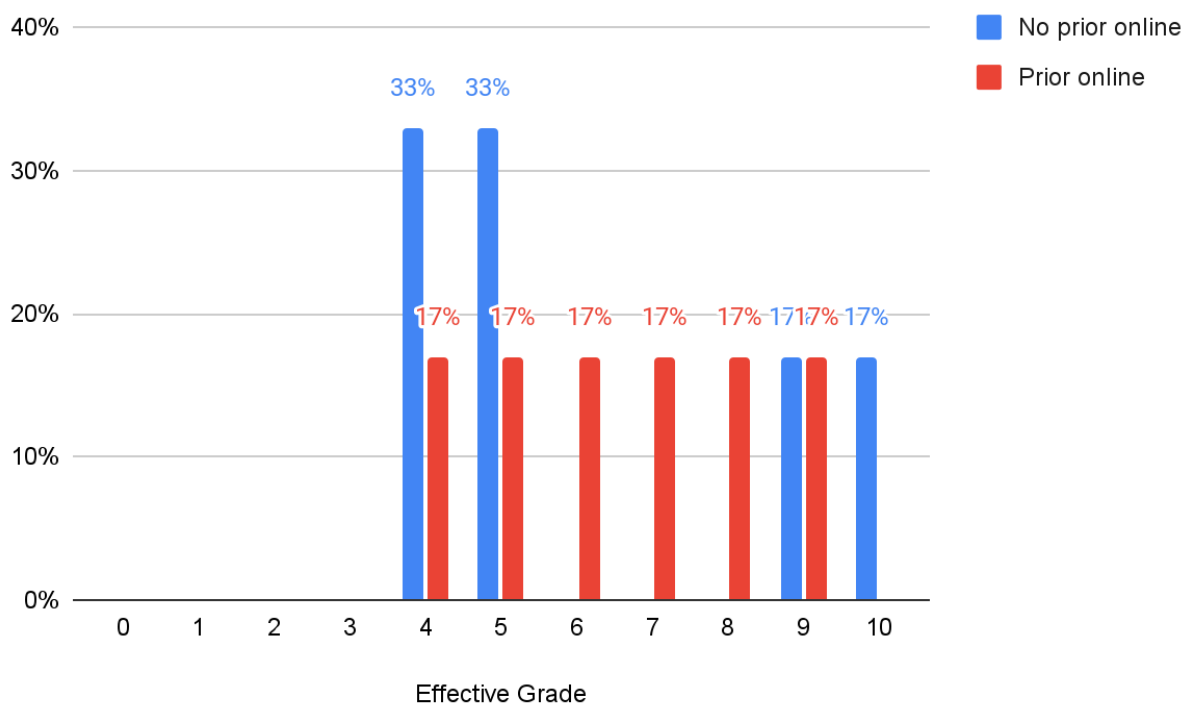
A similar pattern of contradiction appeared when participants responded to the survey question regarding satisfaction and online teaching. Rota et al. (2021) defined satisfaction with a score greater than or equal to 7. Only 28% of participants with online teaching experience prior to COVID-19 gave a satisfaction grade of 7 or higher. This low satisfaction rating maybe in part explained by Participant 3 who stated:

Prior to COVID we developed a questionnaire for students, “am I a good candidate to take online classes”, but everything was forced because of COVID. Students are taking online classes now that [don't have the skill set] to be successful in online classes.

A slight majority, 51%, of respondents with prior online teaching experience considered HyFlex online learning effective with an effective grade of the 7 or higher (Figure 7). However, during the interviews it was revealed by the majority, 67%, of the participants that they are already utilizing the HyFlex modality but did not realize that. The participants responded that they are providing the flexibility their students need to be successful but didn't know what it was called. As stated by Participant 2, “I have had to provide alternative methods so my students can go to work. They may miss hearing my sweet tender voice [in person], but we can help by being flexible.”

Figure 7

On a scale of 0-10, how effective do you think HyFlex online learning is?



Categories and the theme

Distinct categories and their subcategories were analyzed, through the coding system and one major theoretical theme emerged that addressed the central research question: How does the HyFlex delivery method impact faculty self-efficacy regarding teaching?

Initially, four themes emerged from the interview data a) “changing with the times”, b) “students as customers”, c) “barrier”, and d) “structure”. For the theme, “changing with the times” all the participants identified that COVID-19 has changed the way classroom's function and that flexibility is necessary for student success. Not only was the implementation of new technologies and tools in online classes discussed in the interviews, but also ways in which the

traditional classroom is set up and class time is used. All the participants also stated that the most important aspect of education is student success and when their needs are considered at the forefront of every decision, in this regard, “students [are considered] customers”, even if this means that some aspects of the traditional classroom may be lost. The final theme, “barrier” emerged. This theme was brought up by all of the participants, and includes categories and subcategories that include technology, mental health, and overcoming barriers.

An example of the synthesis of categories transforming into themes can be found through information provided from Participant 3. This participant not only considers the implementation of technologies and different tools for online courses, but also in the traditional classroom. They feel that having students comfortable using different tools and technologies will help eliminate barriers and support students during the next global pandemic, or other major events that change the way we are able to interact and participate in higher education:

In my on-site classes, I changed the night we meet and the way the course is structured. The night we were scheduled to meet was crazy for everyone, so we changed it. [Even with my in-person classes], depending on the content that we are covering everything is still on the portal. Still do online discussion posts, students need to learn to communicate in different formats, and I can flip the switch to transition. I feel like COVID or something like it is inevitable. It’s not if, but when, everything is on there [the portal], and repetition is good. The more you use it the better you get, and then there be less trouble transitioning next time.

Higher education classes have not always been offered at night, just as they have not always been offered online. In the pursuit of maintaining student success at the forefront, Participant 3

indicated that it is also important for instructors to set limits and be cognizant of their own mental health and their family needs as they strive to be flexible for students:

As an online instructor, I almost felt like I was on call 24/7. Students were waiting until Saturday at 2a.m. to complete an assignment. I am not responding to students at 2am, but first thing on Sunday morning, I make sure my students are taken care of. This fatigued on me, and now at least one day a week, I don't check [my email or courses] at all. I constantly had my laptop with me... I yell at my kids, "put your phone down!" [for many years] years I have had my laptop right next to me, [I was a student for a long time]. [One weekend] my daughter said to me "I thought you didn't have to do homework anymore." I wasn't doing homework; I was responding to students.

Not only is important for leadership at KBOCC to help students maintain balance, but they recognize that they also must find balance in and out of the classroom.

Narrative Report

This research study used in-depth interview questions that were open-ended and designed to explore to the relationship of the perception from leadership on self-efficacy, satisfaction, and student needs regarding the HyFlex modality. The active interviewer methodology was applied, in which the interviewer and interviewee communicated as equal partners in constructing meaning around an interview event (Holstein & Gubrium, 1995). The theoretical theme that emerged, which encompasses the essence of all of the interviews, categories, and themes that were identified and speaks to the central question, how does the HyFlex delivery method impact faculty self-efficacy regarding teaching? As stated by Participant 2, "No matter the modality, it all comes down to the people. A motivated student will transcend, and so will the professor."

Theme “Students as Customers”

The theme, “students as customers” was represented by fifteen data points in the interviews. Leadership at KBOCC is guided by the principle that students deserve a higher education experience that is responsive to their needs, enhances their self-image, dignity, and independence while working toward their career goals (Keweenaw Bay Ojibwa Community College, 2022). The participants all spoke to their desire and willingness to help students succeed in their academic pursuits and as pointed out by Participant 3, this sometimes is more than just helping a student understand the learning material, but it requires care, compassion, and the ability to adapt:

Our student base is a lot different than at the university. As a community college in rural Michigan, we are all really good at adapting to what the students need. As an employee, I will have babies in my office. If that means Mom can get work done in the computer lab, I will have a baby in my office. The college has daycare but finding workers and capacity if nobody is available to work until 9 at night, it can’t be open. This is a problem for the community college at large. So, if I need to have a baby in my office, I will have a baby in my office.

All of the participants spoke to the diversity of student needs. Participant 4 considers students as customers, and as such considers HyFlex a modality that can help them, “Considering our students as customers, HyFlex meets their needs for busy schedules... “Most students want face-to-face, but students have had to move before completing their degree and they keep asking when courses will be available completely online”. This sentiment was echoed by Participant 1:

HyFlex [subject] works great for a commuter. From a student perspective and as a parent, if we wake up too late to make a 2-hour drive, the class doesn’t have to be

missed. But if there is a challenging subject, having an in-person option is also necessary, especially for a slower student so they can get extra time and help.

Again, thinking about the logistical needs of students, Participant 5 stated, “Hybrid, HyFlex classes work pretty well... helpful with students who don’t have a babysitter or the ability to drive. This way they can attend either way.”

Many of the participants reported that they feel like when they teach online classes that they need to be available 24/7, the workload is more intense, and the “organic” classroom interactions are lacking. As Participant 1 noted, “There’s more prep for online classes and for online classes, I am always on and answering emails.” The amount of work and “organic” interactions regarding online delivery methods was considered by Participant 6, through an interesting cultural lens:

HyFlex creates more workload for faculty, but if you are teaching in person there is no reason you can’t have a zoom link. Sometimes the way you teach might lose students and lose the special connection. But being in a traditional class that can happen too. A student asked a professor, “Why are you looking at me?” Eye contact can be seen as disrespectful. Depending on how you were raised, being looked in the eyes, can be considered disrespectful.

Participant 2 reflected on how teaching is also a learning experience and although online teaching requires more time in different ways than the traditional classroom, it also has benefits:

I prefer the traditional model. Teaching is an ego trip and a punch in the face when you tank, but the energy you get from face-to-face interactions, the flash of inspiration is more organic in person. But [with HyFlex] the student has flexibility and the instructor shows they can step out of their comfort zone... Sometimes when

I am out of my comfort zone, I felt like I was out of touch, it was good to get kicked in the teeth and it made me grow as an instructor. Painful but good. I can envision, I haven't actually been kicked in the teeth.

For the HyFlex modality to work, all course materials must be available in the LMS on the first day of class and for courses in which there are no textbooks, this can be challenging. This is especially true for Anishinaabe cultural courses. Participant 2 feels that online courses are much more structured, but in person classes allow for changing course content as needed.

Although concern was expressed regarding an increased workload that maybe created when HyFlex is used, when considering in the context of "students as customers", the participants expressed a desire to implement tools and technologies that will meet their students' needs. In addition, KBOCC leadership recognizes the unique challenges that adult learners face, and have a strong desire to help them be successful not only in their classes, but also in their personal lives.

Theme "Barrier"

The theme "barrier" was represented by sixteen data points in the interviews. "Barrier" encompasses both technology and mental health. Because there is such a diversity of needs, not just childcare or commuting, but also a need for reliable access to the internet, this lack of access is a barrier to student success. Participant 6 stated, "There is a lack of broadband access, we can provide hot spots, but if there is no cell phone service how do you hot spot? How are going to do an online class? This is a huge barrier." As an example of the theoretical theme, "No matter the modality, it all comes down to the people. A motivated student will transcend, and so will the professor." Participant 5 noted,

When COVID started, internet connections were not available for everyone. Some would drive to campus to sit in front of the building just so they could get their work completed. But it was a difficult transition for some. Some were overwhelmed. If they are not internet savvy, older students drop out of school early and don't come back.

Participant 6 pointed out that some people have never used a computer. Some of the students who attend KBOCC have been incarcerated and have been denied access to learning tools and technologies that have become part of life in the 21st century. Although many take it for granted that everyone has a computer (phone) in their pocket, this is not the case in rural communities. Participant 3 stated:

During COVID, I felt like a lot of the focus was on technical difficulties and took away from the [course content]. How can they conduct a presentation when they didn't know to share a screen? There was a lot of frustrations around the technology, trying to give a presentation with kids in the background, some things are difficult. Computer skills are lacking at the 100 level, and some of our non-traditional students need to be guided. How I am supposed to say, "Share your screen with me", when they don't even know how to sign in?... Sometimes we just need to sit next to them.

Although the transition to online learning was difficult for some, KBOCC already had policies in place that allowed for a transition to online learning that wasn't as "haphazard" as other institutions of higher learning in the U.S. Participant 2 stated that the business degree program had been offered online prior to COVID and that a committee was developing training materials for faculty and that "... we developed a questionnaire for

students, “Am I a good candidate to take online classes?”, but everything was forced because of COVID. Online is not for everyone, for others it is perfect.”

As Participant 3 stated:

Thankfully the online policies were already in place. We didn’t have to create them overnight, we had already a pilot, and business students were in a better position to transfer. We had something to stand on. It was really nice we had a base; did we know if they were going to work? No, but we had a base.

Leadership is worried that another event may occur that will stop face-to-face meetings, but as stated by Participant 3 stated, “It is not if another [event] will occur, but when.” Participant 6 feels that the college is in a good position to pivot again, “Right now, teachers can decide how they deliver their courses. Not everyone likes teaching over Zoom. But if COVID comes back, we can quickly transition.” The faculty that was interviewed currently have all of their learning materials available on the LMS and feel that they are in a good position to transition to all online again. As Participant 4 pointed out, “We need the flexibility, especially if people are getting sick this fall. If COVID comes back, we can move everything can online.”

Theme “Structure”

The theme “structure” was represented by three data points in the interviews. Concern was expressed regarding student accountability if asynchronous delivery was included as a delivery option, as it is in the HyFlex modality. Participant 3 worries that the HyFlex model would lead to a situation that they have experienced before and questions how participation can be fairly graded and weighted when students can choose any modality, “Some students need accountability. They show up for every class but don’t do the homework. Others don’t show up at all but do all of the work. How do you fail one and not the other?” Participant 5 stated that:

Some students need more accountability; they can't work asynchronously. Time management is a problem for many students. They don't ask for help. Students don't like to ask for help. It's hard to get students to participate. Prior to COVID [students were starting to use the resources that are available to them]. Maybe it's cultural that students don't ask for help? [Maybe something like] "Pull yourself about by the bootstraps, or maybe I always thought I should just help myself". The students who don't necessarily need help get help. Maybe some students don't ask for help because other people are going to know they are getting help? But students are starting to use tutor.com. Maybe the anonymity? Maybe the 24 hours a day availability is good?

"Structure" appears to challenge leadership at KBOCC as they strive to find balance for themselves and their students.

Not only was concern raised regarding students needing more structure to help them be successful in their courses, but that sometimes too much structure can be a hinderance. Participant 2 worries that the flexibility of asynchronous delivery creates too many choices for students, "Too much choice can be a prison too. Some students need more structure and accountability." But upon further reflection, they thought maybe the HyFlex model could lead to improved teaching of life skills: "Students can learn time management and other skills, online and in person. Skills that are obtainable, learning how to practice and schedule are not only useful in the classroom but outside of the classroom." In addition, one Participant felt that the asynchronous online learning environment is too structured, as all course materials must be available the first day of class so that students can work at their own pace. Some participants expressed concerns

that this requires too much “structure” and does not allow for adaptations to course materials as needed.

Theme “Changing with the Times”

The theme “changing with the times” was represented twenty-two times in the interview data. Despite concerns regarding missing “organic” student interactions and increased faculty workload, the participants were optimistic about implementing new tools and technologies. In the Spring of 2023, the college will be switching their LMS to Canvas and Participant 3 is excited to implement teaching strategies that her professors used when working on a graduate degree:

I know what worked for me as a student. I graduated [during COVID], I was teaching and going to school, and homeschooling, how did we do it? I don't know but we did. I was there too, dogs barking, kids coming in, most professors were understanding and accommodating, they knew we were working too.... Zoom fatigue is real. I learned from what my professors did, what to do and what not to do.... One professor did a video reply to discussion posts, and it was really cool that he took the time with every single student. The course was strictly online, putting a face to a name, hear his voice, hear him respond, made it a little personal. I hope that we will be able to do that with the new Canvas tools.

Many of the Participants have learned from past experiences. They stressed that the implementation of new technologies needs to be thoughtful and deliberate. However, they feel it is necessary to continually evaluate new tools and teaching strategies.

The Leadership at KBOCC is reflective as they consider the changing needs of their students. They consider what they have experienced, what others around them have experienced,

and try to find a balance of what has worked and what has not worked in the past as they move forward.

I have had to adapt to many changes in and have implemented many different technologies.....Baby steps with technology changes and implementation of technologies...Like with cameras, I first didn't want to be seen, but then realized it was necessary for students. Leadership needs to be proactive first, what situations can people not see or hear, dry runs, and identify problems... [For HyFlex to work] One must have the OWL! Challenges of HyFlex include limiting the discussion between in students in class and online, technology like the OWL, technology that allows for everyone to communicate, can help overcome this challenge.

All the participants expressed optimism about the future of education and implementation of new tools and technologies and have learned lessons from COVID-19. In considering what the last few years have been like and what the future generation of learner's needs will be, Participant 3 reflected on her personal life:

We all have a little PTSD. During COVID, my [child] skipped school right in front me. I told him I can see you not being in class. Younger teachers were ready to go, old schoolteachers still used textbooks and handouts [that was a hard transition]. [My child] was struggling with [a subject in school], I remember working with him, [he couldn't pass a level in a learning game], he's crying, I am crying, two hours in, I am not a [subject] teacher, and we're stuck in the house quarantining together...everyone in the house is crying over [the subject]. His teacher advanced him through the game. We could start fresh the next day. What

will happen when [Kindergarten] the COVID-generation hits higher education?

What will they want?

Leadership at KBOCC is forward thinking and considers the needs of future generations. KBOCC not only educates adult learners, but they also have a partnership with the local high school to provide dual enrollment opportunities. Their commitment to each individual student guides them. The desire of leadership at KBOCC to help break generational poverty and reduce historical trauma helps guide them as they “change with the times”.

Summary

Based on the results of this mixed method finding, leadership at KBOCC are open the idea of implementing the HyFlex model. The faculty and administration reported high self-efficacy regarding student learning, performance, and satisfaction regarding their ability to deliver online materials and the use of the HyFlex model. They are forward-thinking and consider the needs of not only current students but of future students. Leadership at KBOCC feels that providing online classes and HyFlex opportunities is a way to expand the student population and diversify the courses that are offered by expanding teaching opportunities.

Chapter Five: Conclusions

Because teaching and learning during a pandemic was an unprecedented experience for both educational leaders and students, there are many possible lessons to be learned for improving student success. Most institutions of higher education are looking for novel ways to increase enrollment, improve educational offerings, and increase student retention. In the process of reaching these goals, institutions seek to increase recruitment, keep costs down, keep education affordable, implement new tools and technologies that were used during the pandemic, and create an equitable learning environment (Burke, 2021; National Education Association, 2021; Rapanta et al., 2021). These efforts may seem overwhelming, but solutions are available. By considering what technologies and tools worked during the COVID-19 pandemic, it may be possible to rethink traditional education. This timing may be even more salient for colleges and universities that are attempting to provide a higher education to peoples who have been previously disenfranchised, left in a cycle of poverty, and/or denied their cultural needs be integrated into education. It is in this context; this chapter explores the research questions and explains what was learned. It includes a discussion of the substantive theory that surfaced, and provides an assessment of validity, significance of the findings, and recommendations for future research, particularly as it pertains to a small tribal college.

Discussion of Results

This mixed-method research was guided by two questions and four sub-questions. The researcher sought to understand the relationship between leadership perception of their self-efficacy with different teaching modalities and student learning, performance, or satisfaction as it pertains the HyFlex model. Through the use and integration of both qualitative and quantitative data, an interdependent analysis of the data provided insight into subtle nuances that were discovered (Guetterman, Fetters, & Creswell, 2015).

Quantitative Research Question

This study sought to understand what was the relationship between the perception of delivering online learning materials and faculty and administration self-efficacy and student learning, performance, and satisfaction?

Satisfaction with online teaching at KBOCC was higher than was nationally reported during the global COVID-19 pandemic (Bozkurt et al., 2020; Lee & Lee, 2020; Burke, 2021). Leadership that completed the survey and were interviewed felt that they were in position to quickly pivot to online learning, and no one reported feeling it was “haphazard” (the term used described the general approach of the COVID-19 pivot, Bozkurt et al., 2020). Faculty and administration at KBOCC feel that being able to adapt to student needs is one of most of the important services that they can provide. The student population at KBOCC is diverse and as such, so are the challenges they face. One main theoretical theme emerged from this research, highlighted by the quote: “No matter the modality, it all comes down to the people. A motivated student will transcend, and so will the professor.” In this unique time, educators need to be compassionate and reconsider traditional teaching methods to ensure student success, especially when considering the adult learner.

Qualitative Central Question

This study sought to understand how does the HyFlex delivery method impact faculty self-efficacy regarding teaching?

Based on the results of this mixed method study, many of the faculty have already implemented HyFlex, although that term is not widely used. Many of the faculty reported that even when in a traditional classroom setting, they still require participation in the LMS course discussion board. The leadership at KBOCC are open to the idea of implementing the HyFlex

model college wide. The faculty and administration reported high self-efficacy regarding student learning, performance, and satisfaction regarding their ability to deliver online materials and the use of the HyFlex model. They are forward thinking and consider the needs of not only current students but of future students. Leadership at KBOCC feels that providing online classes and HyFlex opportunities is a way to expand not only the student population, but to diversify the courses that are offered. To reinforce this idea, one member of the leadership stated: “You can’t afford to move here to be an adjunct faculty member. But now we can have courses taught [from anyone in the world].” Not only does remote education enable adult learners to gain degrees that were otherwise unobtainable due to family or employment obligations (Flint, 2005; Baird et al., 2021), but it also provides the opportunity for experts to teach courses in rural areas without relocating.

Sub-questions.

1. How do faculty and administration perceive the advantages and limitations of implementing HyFlex courses?

The faculty and administration perceive flexibility as the greatest advantage and limitation of the HyFlex model. Many students at KBOCC are working adults. Adult learners have many family and work commitments that often require them to prioritize coursework and class attendance differently than traditional college students (Timarong et al., 2003); Flint, 2005). HyFlex allows students to determine from session to session how they will engage in class delivery of instruction: online synchronous, online asynchronous, or in person. Some faculty considered HyFlex a wonderful model for students in the event of poor weather conditions, caregiving demands, and work schedules. However, they do not feel that online asynchronous learning is possible for some students.

Concerns were raised regarding access to the internet and the reality that some students lack basic computer skills. As such, the participants do not think that the HyFlex model can be a single solution that is implemented that will ensure every student is successful in their academic pursuits. However, they are willing to adapt and change for their individual students and feel confident that much of the faculty can successfully implement the HyFlex tools needed to ensure student success. In fact, all the faculty interviewed had already adapted the core tenants of the model but had not realized it. They all provide options for alternative delivery methods if a student must miss a class session, such as recorded class sessions and all learning materials being available on the LMS. This teaching strategy reinforces the theme that emerged from this research: “No matter the modality, it all comes down to the people. A motivated student will transcend, and so will the professor.” This theme is reinforced from the perspectives of the participants. The faculty are willing to adjust the way they use in class meeting time and allow students to complete homework, adjust class meeting time based on student work schedules, and provide additional resources to help ensure students have the support needed to complete coursework.

The faculty also expressed concern regarding the flexibility of HyFlex and it might be associated with a lack of structure. Participant 2 worried that the flexibility of asynchronous delivery creates too much choice for students, “Too much choice can be a prison too, some students need more structure and accountability.” But upon further reflection, they thought maybe the HyFlex model could lead to improved teaching of time management and other practical life skills. As suggested by Knowles et al. (2020), the more adult learners are engaged in learning are self-directed and take the initiative to learn something, the more likely they are to retain the material permanently. Stabback (2016) argued that curriculum bridges the gap between education and development and should include the competencies associated with lifelong learning. It is possible

that some of the limitations and concerns raised by faculty at KBOCC regarding the HyFlex model may aid in achieving andragogy, the art and science of helping adults learn (Knowles et al., 2020).

2. How do the perceptions of delivery methods and satisfaction differ between faculty and administration?

Administration and faculty agreed that the HyFlex model can be used to increase course offerings and provide flexibility. However, it was acknowledged that just as not all students are prepared to complete online asynchronous courses, not all faculty are comfortable with that modality either. The faculty that participated in the interviews feel that they are satisfied and comfortable delivering course materials in multiple modalities, but do not think that all adjunct faculty at KBOCC would be. This is reflected in the survey responses in which 71% of participants who did not teach online prior to the global COVID-19 pandemic stated they would not change the modality they used to deliver teaching materials. Leadership at KBOCC, however, feels that another event is likely to occur that will require schools to be closed again; and reported that training students and faculty to be comfortable with HyFlex and other modalities is imperative to be successful during these events.

3. How do faculty choose to deliver course materials?

The administration prefers that all courses meet either in a traditional classroom setting or synchronous online because they feel that the students prefer face to face interactions. Faculty at KBOCC can pick from semester to semester how they will deliver course materials. The faculty reported that some of the courses they teach are better taught in person and some are better over videoconferencing. For example, teaching students how to use computer software over videoconferencing has advantages over a traditional classroom. The faculty can share their screen and show step by step how to perform a task. As reported by a faculty member, “In

person, I was running, hands raised every time I showed something new on the screen. But in Zoom the screen share is amazing, everyone can follow along with me and do it themselves.” Other courses that include creating traditional Ojibwe ceremonial clothing were reported as being more successful when done in person. As the college continues to expand and grow the student population outside of the community, the HyFlex model could provide the opportunity not only to increase the number of graduates in STEM fields but could also aid in more people becoming aware of and educated in Ojibwe culture and traditions.

4. How do faculty and administration perceive student learning, performance, or satisfaction with different delivery modalities?

Allowing students to choose different delivery modalities may require that faculty change the way they evaluate student performance, attendance, and participation. Participant 3 worries that the HyFlex model would lead to a situation that they have experienced before and questions how participation can be graded and weighted when students can choose any modality. As stated, “Some students need accountability, they show up for every class but don’t do the homework. Others don’t show up at all but do all the work, how do you fail one and not the other?” Fairing accessing student coursework is required no matter what modality the course materials are delivered through.

In STEM classes, evaluation of graded work may need to be adjusted for HyFlex. For example, if the course requires a dissection to be performed, students who perform the dissection in a physical lab with the faculty member may be asked to explain orally various structures and functions of the animal. The in-person lab student may not be required to provide written answers to the same questions that a student who performed the dissection asynchronously online would be. In addition, students that participate in discussion that occurs synchronously

online or in the classroom may not be required to post to the asynchronous online discussion board as often as the asynchronous online students. This variation in being present can create problems in continuity in learning and evaluation.

It was also suggested that time management is a skill that many students have not been taught. Asynchronous online courses may not provide enough structure for these students. KBOCC does provide many students services to help ensure student success. Although in person services such as tutoring are not widely used, leadership reported that the newly implemented 24/7 tutoring service and online mental health resource are starting to be heavily used. Participant 5 stated that:

Maybe some students don't ask for help because other people are going to know [they] are getting help? But students are starting to use tutor.com. Maybe because of the anonymity? Maybe the 24 hours a day availability is good? Tools like these might help students.

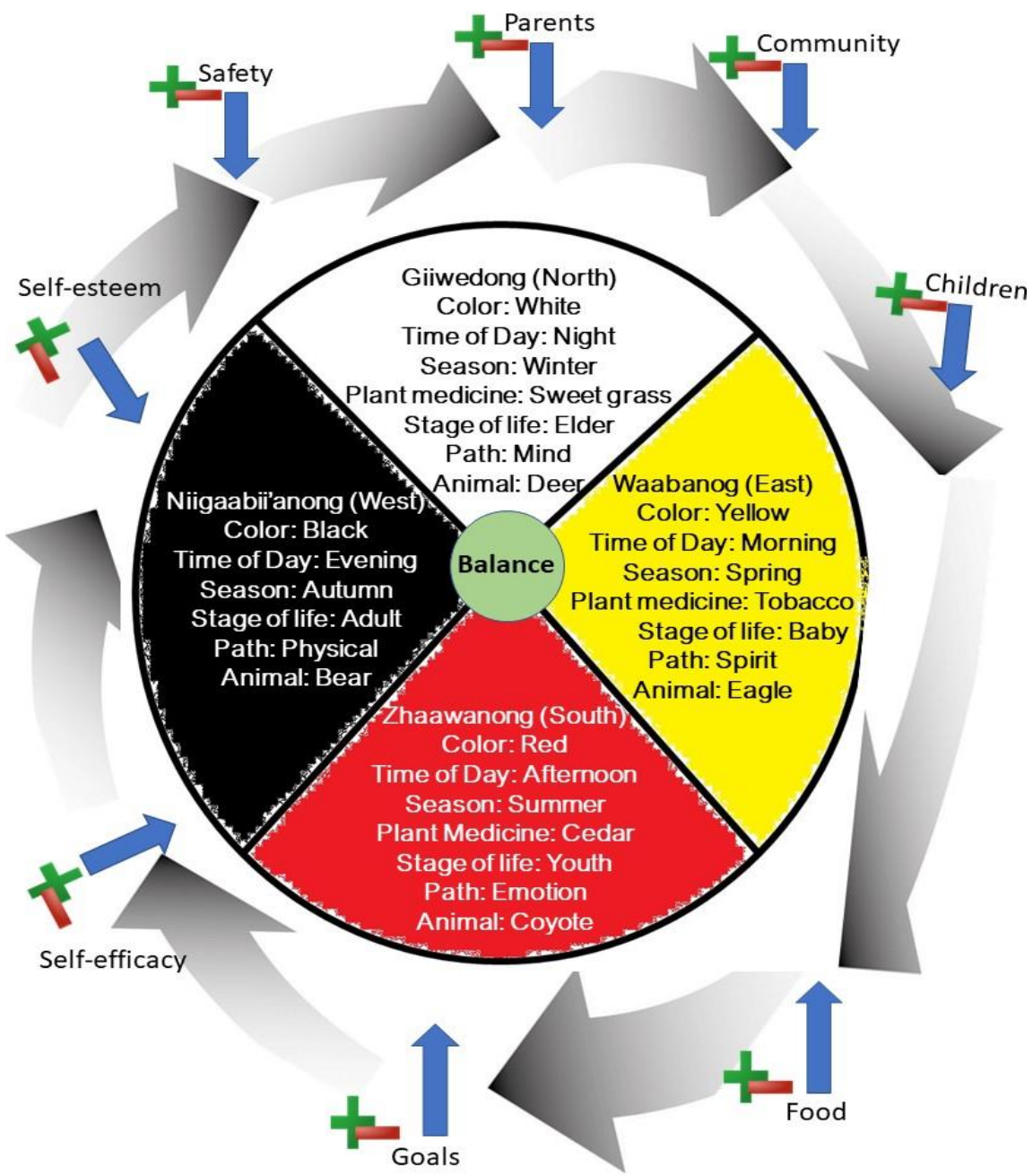
As such, the participants do not think that a single solution can be implemented that will ensure every student is successful in their academic pursuits.

Leadership at KBOCC strives to evaluate and use any tool that will help students be success and find balance in their personal and academic lives. They weave traditional Anishinaabe stories and narratives into the curriculum, and at the heart of the Ojibwe people is the Medicine Wheel. The Medicine Wheel reflects the balance that must be achieved. When there is balance, there is harmony. There must be balance in the four quadrants of the Medicine Wheel for each individual, community, ecosystem, and the Earth to achieve Mino-bimaadiziwn ("the good life").

Based on the researcher's limited, but growing, knowledge of the Medicine Wheel, Ojibwe culture, and the perspectives obtained through the surveys and interviews, Figure 8 represents some of the factors that KBOCC leadership perceive as potentially positively or negatively impacting an individual student's balance. This will ultimately also impact the successful completion of their coursework and career goals. The Medicine Wheel is a graphical representation of how there is a constant interaction between the physical, emotional, mental, spiritual, and the natural worlds. However, there are many factors that may influence an adult learner's ability to stay in balance. For example, adult learners are often caregivers to parents and children. Although the learners may receive support and encouragement to attend college and earn a degree from the people they are caring for (represented by a plus sign). This added responsibility may also require a significant time requirement (represented by the minus sign) caring for a loved one could hurt one's academics (this a minus sign for one's grade), but it could be a positive sign in one's well-being. All these elements, not just the mode of delivery, influence student success.

Figure 8

Medicine Wheel with factors that may impact a student's balance



Note: This medicine was created based on the KBIC Medicine Wheel and embodies the various aspects that must be in balance. Movement in the Medicine wheel is circular and helps to align with the forces of Nature (KBIC Health System, 2022).

The leadership and many of the faculty at KBOCC have already implemented the HyFlex model (even though they didn't call it by that name) because it meets their student's needs and helps them achieve a balance between family obligations and education goals. KBOCC has provided many innovative tools and cultural resources outside of the classroom to help students be successful in academic and life goals. However, further research is needed to determine if this has resulted in greater student retention and success.

Recommendations

For Future Study

This study provided a preliminary exploration of faculty and administration self-efficacy regarding student learning, performance, and satisfaction regarding their ability to deliver online materials and the use of the HyFlex model. While sixteen participants completed the online survey, of which 50% had not taught online classes prior to the global COVID-19 pandemic, only six of them agreed to be interviewed. While the six participants provided rich, thick descriptions of their self-efficacy and how they perceive this regarding student learning, performance, and satisfaction, this information only provides a glimpse into the experience of those who were willing to participate. These results also do not represent the student experience or their self-efficacy. The researcher feels that the national trend of retention rates, course completion, and student satisfaction and self-efficacy be evaluated post COVID-19 global pandemic between KBOCC, other tribal colleges, and other institutions of higher education in the U.S., especially as it pertains to adult learners and STEM courses. These trends may help inform TCU's as they redefine student success.

To develop a grounded theory mixed-method study more fully, future research would benefit from gathering information from even more faculty, leadership, students, and tribal

elders. As described in this study, there seems to be some contradictions. However, this might be more fully understood through a broader lens. This study found that two “exceptions”, or minimally addressed topics by participants, were “culture” and “Medicine Wheel.” Culture and the Medicine Wheel may not be an exception if a larger number of participants were to be included in future research. An alternative hypothesis is that these are not exceptions, but that investigative error occurred. In this study, the researcher is a classically trained Western/Colonial researcher and may not have really heard what the participants were saying. The researcher has had limited exposure to Anishinaabe traditions, perspectives, language, and culture. It is impossible to understand a new language without also understanding the culture. When considering culturally significant symbols and philosophical way of life, in terms of higher education, it is evident that a diverse team be assembled to interview the recruit and interview the participants.

For Practitioners

This study sought to generate a theoretical understanding of teaching modalities in higher education that could allow for educational leaders to address retention and degree completion issues. While this study provides a limited, precursory understanding of this phenomenon, themes did emerge that inform on academic and student support practices. The HyFlex model allows for students to choose from session to session if they will attend a class in person, synchronously online, or asynchronously online. The HyFlex model does not only allow for student flexibility, but also for instructor flexibility. Although the HyFlex model requires that an in-person option be available to students, this in-person option does not necessarily have to be performed by the lead instructor. This is necessary as an instructor may not also be able meet in person, and in these instances, it may be

necessary to employ a teaching assistant. A teaching assistant may also be helpful with the implementation of new technologies that allow for simultaneous discussions between students attending a class session in person and students participating synchronously online. Employing teaching assistants may not only help faculty successfully lead a HyFlex classroom room, but also allow for training of the next generation of teachers.

HyFlex does require that courses be completely set up in advance. Instructors must be able to deliver course materials in different modalities all at the same time. In order to ensure that the HyFlex model is successfully implemented, administration must provide support services, which includes helping with online course design and utilizing novel technologies. Having policies, procedures, and best practices in place prior to using the HyFlex model will help ensure that faculty have the support they need to be successful.

Although there is concern that the HyFlex model may create more work for faculty, the HyFlex model is an inclusive model. As colleges and university invest in programs that support faculty in developing a deeper understanding of culture, race, sexual identity, and students with unique needs (Friend & Burnsuck, 2019), they must consider all available tools and technologies. To overcome the economic and racial gap in education an educational environment that is equal and meaningful to all individuals is critical (Glatthorn et al., 2019). The HyFlex model allows for student success no matter the student's ability or learning pace. For a student that may need more one-on-one attention, the in-class person option is available or for remote students, the synchronously online option. For a student that is more comfortable with the learning outcomes or is self-directed out of choice or need, the asynchronously online option is available.

Contribution to the Field

The Covid-19 global pandemic presented an unprecedented experience in higher education for students, staff, faculty, and administrators. While this study provides a limited, preliminary theoretical understanding of the perception of delivering online learning materials and faculty and administration self-efficacy and student learning, performance, and satisfaction at tribal college, it does allow for researchers to build upon this initial research to develop an even more informative exploration of a phenomenon that does not currently exist in the literature. With relation to Keweenaw Bay Ojibwa Community College, this study provides educational leaders with information related to how faculty and staff perceives the implementation of different teaching modalities and how to integrate HyFlex model throughout the college where thought to be the most effective.

Conclusion

This mixed method study sought to gain an understanding between the perception of delivering online learning materials and faculty and administration self-efficacy and student learning, performance, and satisfaction. One theoretical theme emerged from this research: “No matter the modality, it all comes down to the people. A motivated student will transcend, and so will the professor.” In the Anishinaabe culture, the cedar tree has many different gifts and tools to share with people throughout their different stages of life (Jones, 2013). Like the cedar tree, many in leadership positions at KBOCC are flexible and giving of their time and resources to help ensure every student is successful. Whether traditional age, adult learners, or dual enrolled high school students, utilizing lessons learned during the global COVID-19 pandemic is necessary to ensure student success.

Implementation of the HyFlex model allows flexibility and potentially increases student success (Beatty, 2019). Utilization of novel tools and technologies can enable adult learners to gain degrees that were otherwise unobtainable due to family or employment obligations (Flint, 2005; Baird et al., 2021). For decades many colleges and universities refused to embrace and use technologies or reconsider their teaching methodology (Faulkner, 1959; Moore, 1999; Bain, 2004; Friedman, 2005; Hilton et al., 2013; Francescucci & Rohani, 2019; Lee & Lee, 2021). However, the global COVID-19 pandemic forced everyone to quickly pivot to online learning and for many this transition resulted in poor student outcomes (Bozkurt et al., 2020; Lee & Lee, 2021). During the global COVID-19 pandemic many students dropped out of college and whether they will ever return is yet to be determined (Burke, 2021). College and university leadership and faculty are currently in a unique situation. It is becoming clear that the model of having students read a traditional textbook, sit at a desk, and learn to take tests is not going to provide them with the skills that they need to be successful in the changing global society and economy (Friedman, 2005; Seemiller & Grace, 2016; Francescucci & Rohani, 2019).

Adult students often attend universities and colleges to improve their life situation (Flint, 2005). This is especially true for previously disenfranchised students, as successful completion of a degree in higher education can help break the cycle of generational poverty, increase self-efficacy, and lead to increased community engagement (Shield, 2004; Brave Heart et al., 2011; Blessinger & Cozza, 2016; Baird et al., 2021). The HyFlex teaching modality provides opportunities create a more inclusive learning environment, expand courses that are offered by colleges and universities, and helps ensure that all students, no matter what their external demands are, can be successful in their academic and life pursuits.

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Appendix A

Faculty/Administration Survey Questions

The survey will begin with an informed consent page (Appendix B) and was followed by four sections. Initial surveys that are distributed to all faculty and administration were confidential and distributed through Qualtrics. The survey, created by Rota et al. (2021) was modified in the following ways:

1. The subject “math” was removed from the questions
2. The scale was changed from 1-10, to be 0-10, as a 0-10 scale allows for a mathematical midpoint of 5.
3. Italian/Italy was removed from the questions.
4. Additional demographic information was requested. This included: ethnicity, academic role, and online teaching experience prior to the global COVID-19 pandemic.
5. Question 28 was duplicated to inquire about HyFlex online learning.

Q1 What is your gender? Male, Female, Non-binary / third gender, Prefer not to say

Q2 What is your age? Under 18, 18 – 24, 25 – 34, 35 – 44, 45 – 54, 55 – 64, 65 – 74, 75 – 84, 85 or older, Prefer not to answer

Q3 What is your ethnicity? Check all that apply. White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, Other, Prefer not to answer.

Q4 What is your academic role at KBOCC? Full professor, Adjunct professor, Other [please specify]

End of Block: Demographic Data

Start of Block: Online Teaching

Q15 Prior to COVID-19, did KBOCC admit the possibility of providing online teaching? No, Yes

Q16 Prior to COVID-19, have you ever delivered online teaching? No, Yes

Q17 How much had you dedicated yourself to studying in different modalities to deliver online teaching? None at all, A little, A moderate amount, A lot, A great deal,

Q18 During COVID-19, how did you share the teaching material (slides, articles, code, etc.) with the students? (Select all that apply) By uploading it on the University's LMS ("Learning Management System") platform, Through clouding services (DropBox, OneDrive, Google Drive, etc ..), By e-mail, Other [please specify]

Q19 During COVID-19, which modality did you choose to deliver online teaching?

Asynchronous (only video lessons uploaded on the University LMS platform), Synchronous (only live lessons in virtual classrooms called by video conference), Both (live lessons in virtual

classrooms recorded and then uploaded to the University LMS platform), Mixed (some live lessons and some video lessons uploaded on the University LMS platform)

Q20 How was your experience with online compared to traditional teaching? Not effective at all, Slightly effective, Moderately effective, Very effective, Extremely effective

Q21 Have you experienced technical difficulties with online teaching? No, Yes

Q22 If so, what kind of technical problems have you experienced? (Select all that apply), Connection problems (e.g. overload on the network and/or on the University LMS platform, interruptions on the connection, etc.), Students' difficulties in configuring the connection to the

online lessons, Lack of knowledge and/or students' difficulties with software platforms used to deliver online teaching, Other [please specify]

Q16 Use the space below if you want to share additional consideration on online teaching

Q17 Have you ever had to reprimand a student because he/she didn't follow the university's rules of conduct for taking online exams? No, Yes, I have not yet delivered online exams

Q18 How difficult was your experience with online exams? Extremely difficult, Somewhat difficult, Neither easy nor difficult, Somewhat easy, Extremely easy, I have not delivered online exams

Q19 How were student's evaluations with online compared to traditional exams? Lower, Comparable, Higher, Don't know, I have not yet delivered online exams

Q20 How difficult was your experience with online exams? Not at all, A little, Neither easy nor difficult, A moderate amount, A lot, I have not delivered online exams

Q21 If so, what kind of problems have you experienced? (Select all the apply) Difficulty and/or doubts in verifying the identity of the examinees, Connection problems (e.g. overload on the network and/or on the University LMS platform, interruptions on the connection, etc.), Students' difficulties in configuring the connection to the online exams, My lack of knowledge of the functionalities of the software platform to deliver online exams (including "e-proctoring"

software), Difficulty of examinees in using the software platform used to deliver the online exam, Lack of adequate software and hardware equipment of the examinees, Other [please specify]

Q22 From 0 to 10, how much did you enjoy delivering online exams?

Q23 From 0 to 10, how much did you enjoy delivering online teaching?

Q24 Use the space below if you want to share additional consideration on online exams.

Q25 Would you provide online teaching in the future? No, Maybe, Yes

Q26 Would you change the modality you used to deliver online teaching in the future? No, Maybe, Yes

Q27 Would you change the modality you used to deliver online exams in the future? No, Maybe, Yes

Q28 From 0 to 10, how effective do you think online teaching is?

Q29 On a scale of 0-10, how effective do you think HyFlex online learning is?

End of Block: Online Teaching

Start of Block: Interview

Q1 Thank you for taking the time to complete this survey. The researcher would like the opportunity to interview you and follow up on the survey questions. If you are willing to be interviewed, the researcher will schedule a Zoom meeting and ask you a few questions. The interview should not take more than 30 minutes of your time. If you agree to participate in the interview, you will be entered into a second \$50 Amazon gift card drawing.

Q2 Are you willing to participate in a Zoom interview?

- No (1)
- Yes, please enter the best method to contact you to schedule a Zoom meeting (email address or phone number) (2) _____

End of Block: Interview

Appendix B

PARTICIPANT INFORMATION AND CONSENT FORM

STUDY TITLE: Utilizing Lessons Learned During the Global COVID-19 Pandemic to Inform Best Practices and Online Science Courses

PROJECT DIRECTORS: Sandra Adams
32 Campus Drive
Missoula, MT 59812

Special Instructions to the Participant:

This consent form may contain words that are new to you. If you read any words that are not clear to you, please ask the person who gave you this form to explain them to you.

Purpose:

- You are being asked to take part in a research study examining the implementation of the HyFlex Model into a General Biology with Lab (Bi101) course at Keweenaw Bay Ojibwa Community College (KBOCC).
- You have been chosen because you are currently enrolled as a student or are employed at KBOCC.
- The purpose of this research study is to learn more about students, faculty, and administration feel about asynchronous, synchronous, and HyFlex course delivery methods.

Procedures:

- You will be asked a variety of questions related to asynchronous, synchronous, and HyFlex course delivery methods.
- A detailed analysis will be done of the data provided through your responses.
- You will need to sign this consent form in order to participate in the study.

Risks/Discomforts:

- Although any risks or discomforts are not anticipated, answering the questions may cause you to think about feelings that make you sad or upset.
- You will be informed of any new information that may affect your decision to remain in the study.

Benefits:

- Although you may not directly benefit from taking part in this study, your contribution to it will assist educational leaders in addressing best practices at KBOCC.
- Your help with this study may assist educational leaders in developing a deeper understanding of how the evolution of asynchronous, synchronous, and HyFlex course delivery methods has impacted student learning and self-efficacy.
- You will be entered to win a drawing for a \$50 Amazon gift certificate, however, there is no promise that you will receive any benefit from taking part in this study.

Confidentiality:

- Your data will be kept private and will not be released without your consent except as required by law.
- Only the researcher and her faculty supervisor will have access to the files.
- Your identity will be kept confidential.

Compensation for Injury:

- Although we do not foresee any risk in taking part in this study, the following liability statement is required in all University of Montana consent forms.

In the event that you are injured as a result of this research you should individually seek appropriate medical treatment. If the injury is caused by the negligence of the University or any of its employees, you may be entitled to reimbursement or compensation pursuant to the Comprehensive State Insurance Plan established by the Department of Administration under the authority of M.C.A., Title2, Chapter 9. In the event of a claim for such injury, further information may be obtained from the University's Claims representative or University Legal Counsel. (Reviewed by University Legal Counsel, July 6, 1993)

Voluntary Participation/Withdrawal:

- Your decision to take part in this research study is entirely voluntary.
- You may refuse to take part in or you may withdraw from the study at any time without penalty or loss of benefits to which you are normally entitled.
- If you decide to withdraw you may do so at any time during the study without penalty.
- You may leave the study for any reason and you may choose not to answer any question during the interview or focus group discussion.
- You may be asked to leave the study for any of the following reasons:
 1. Failure to follow the Project Director's instructions;
 2. A serious adverse reaction which may require evaluation;
 3. The Project Director thinks it is in the best interest of your health and welfare; or
 4. The study is terminated.

Questions:

- You may wish to discuss this with others before you agree to take part in this study.
- If you have any questions about the research now or during the study contact: Sandra Adams at 920-392-2372.
- If you have any questions regarding your rights as a research participant, you may contact the Chair of the IRB through The University of Montana Research Office at 406-243-6670.

Participant's Statement of Consent:

I have read the above description of this research study. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that any future questions I may have will also be answered by a member of the research team. I voluntarily agree to take part in this study. I understand I will receive a copy of this consent form.

Printed (Typed) Name of Subject: _____

Participant's Signature: _____

Date: _____

Appendix C

Faculty/Administration Interview Protocol

Date: _____, 2022 Time: _____ (am / pm) Male: ____ Female: ____
 Participant Code: _____ Interview: ____ FU# _____
 Interviewer: _____

Setting:

Interview via Zoom

Opening Statements:

Thank you for completing the Consent to Participate form and thereby agreeing to take time from your busy schedule to participate in this research study. There are a few things that I would like to make sure you understand before we get started.

- I will be asking you some general questions and writing notes as we proceed.
- All information from this interview will be confidential. That is, you will not be identified by name, location, or place of employment in this study or in any report from this study.
- You will only be identified as "P" in these notes. A confidential participant code will be used to identify you for any follow-up questions.
- When you are quoted your identity will remain confidential.
- Your name will only be known by this researcher her faculty supervisor.
- The confidentiality of your name and place of employment is also under the purview of the Institutional Review Board at the University of Montana and Keweenaw Bay Ojibwa Community College.
- You may stop this interview at any time without any negative consequences.

Please be assured that there are no correct answers to the questions that I will be asking. What is important are your thoughts, feelings, and experiences. The intent of this interview is to gather your thoughts, feelings, and experiences, not to make judgments on your responses.

INTERVIEW QUESTIONS

In Hybrid-Flexible (HyFlex) classes, students are given full control over their decisions to participate synchronously online, asynchronously online, or in the classroom. It has been suggested this provides students with the “ability to make participation choices based on convenience, learning progress, social interaction preferences, or other factors important to them at the time”. In contrast, faculty do not have a choice about participation mode, and they have to provide both an online and a classroom experience supporting student learning.

1. What is your position at KBOCC?
2. How long have you been teaching online courses?

3. How many courses are you delivering online?
4. Overall, how many hours of online teaching are you providing?
5. How was your experience with online compared to traditional teaching?
6. Have you used the HyFlex model or other multi-module delivery methods for any of your courses in the past? Please explain.
7. What do you see as advantages of HyFlex?
8. What do you see as the limitations of HyFlex?
9. Is there anything else that you would like to share about HyFlex courses?

Appendix D
Interview Data

Raw Data	Preliminary Code	Preliminary Category
“HyFlex creates more workload for faculty, but if you are teaching in person there is no reason you can’t have a zoom link. Sometimes the way you teach might lose students, and lose the special connection. But being class that can happen too. A student asked a professor, “Why are you looking at me?” Eye contact can be seen as disrespectful. Depending on you were raised, being looked in the eyes, can be considered disrespectful.”	"special connection"	"more organic in person"
“I prefer the traditional model. Teaching is an ego trip and a punch in the face when you tank, but the energy you get from face-to-face interactions, the flashes of inspiration is more organic in person.”	"more organic in person"	"more organic in person"
“I want to implement and encourage trust, those stories can be from a vulnerable place and it can be healing and beautiful. No matter what happens, those conversations were meant to happen. Sometimes we need to take a step back and slow down, things go wrong and things take time. We need to feel it out and slow it down. Zoom is more condensed.”	"step back and slow down"	"more organic in person"
“Camera on, ”don’t micromanage my camera” in person I don’t have to be that controlling, we can go outside, whatever the room feels.”	"micromanage"	"structured.”
“I run my classes like the science of art, meticulous as a creative control freak.”	"meticulous as a creative control freak."	"structured.”
“There are no textbooks for the [subjects] I teach. I have to build everything. In-person I can go with the flow and change as needed, online classes are much more structured.”	"structured.”	"structured.”
"All of my classes have an online component; in person I can read the room. Even in my all-online courses, I have my students go do things out in the field.”	"read the room"	"changing with the times"
"Right now, teachers can decide how they deliver their courses. Not everyone likes teaching over Zoom. But if COVID comes back, we can quickly transition."	"quickly transition"	"changing with the times"
“ I have had to adapt to many changes in and have implemented many different technologies.....Baby steps with technology changes and implementation of technologies...cameras, I didn't want to be seen, but then realized it was necessary for students. Leadership needs to	“dry runs and identify problems” "implemented " and "integration of technologies"	"changing with the times"

be proactive first, what situations can people not see or hear, dry runs and identify problems.”		
“Before COVID, we had an online class task force to evaluate online courses, and how we could offer online courses, with an intro online course. Because of COVID it just went online.”	"evaluate"-forward thinking	“changing with the times”
“Changing with the times. I am pretty sure my students wouldn’t complain if I had to teach from a sunny location when I travel to a conference.”	“changing with the times”	“changing with the times”
“During COVID, my [child] skipped school right in front me.....younger teachers were ready to go, old school teachers still used textbooks and handouts...struggles with [a subject in school], I remember working with him,[he couldn’t pass a level in a learning game], he’s crying, I am crying...2 hours in, I am not a [subject] teacher, and we’re stuck in the house quarantine together...and everyone is crying over [subject]. His teacher advanced him through the game.....We could start fresh the next day.”	Considering future student needs	“changing with the times”
“HyFlex could help expand our student population.”	Considering future students needs	“changing with the times”
“HyFlex is beneficial, to students and faculty. We can make classes available that couldn’t be offered otherwise.”	“changing with the times”	“changing with the times”
“I have all assignments available on LMS, but I have to consider how I will deliver materials. [For HyFlex to work] One must have the OWL” Challenges of HyFlex include “limiting discussion in class, students in class and online, technology like the OWL, technology that allows for everyone to communicate”	integration of technologies	“changing with the times”
“I have never heard of HyFlex, I am the soldier who does what he told. But the student has flexibility. The instructor shows they can step out of their comfort zone.”	"step out of their comfort zone.“	“changing with the times”
“I learned from what my professors did, what to do and what not to do.....One professor did a video reply to discussion posts and it is really cool that he took the time with every single student. The course was strictly online, putting a face to a name, hear his voice, hear him respond, made it a little personal, I hope that we will be able to do that with the new Canvas tools”	integration of technologies faculty skill set	“changing with the times”
“I videotape my classes and the whole class gets the link unless everyone is there. I am not sure if anyone really wants to watch my exciting lecture about [subject] again.”	integration of technologies	“changing with the times”
“In person, I was running, hands raised every time I showed something new on the screen. But in Zoom the screen share	integration of technologies	“changing with the times”

is amazing, everyone can follow along with me and do it themselves.”		
“No matter the modality, it all comes down to the people. A motivated student will transcend, and so will the professor.”	" A motivated student will transcend, and so will the professor."	"changing with the times"
“Policies for online teaching were in place. We didn’t miss a beat. COVID has proven we can do it remotely. We were moving in that direction, but it would have been a slower transition. Just business was all online. We provide laptops and hot spots. Before COVID, we never would have hired a professor from outside the state. Now we have hired people from different places and with different perspectives and insights, you can’t move here for an adjunct position.”	resilience-integration of technologies	"changing with the times"
“Sometimes when I am out of my comfort zone in the classroom, I felt like I was out of touch, it was good to get kicked in the teeth and it made me grow as an instructor. Painful but good. I can envision, I haven’t actually been kicked in the teeth.”	Comfort Zone	"changing with the times"
“We need the flexibility, especially if people are getting sick this fall. If COVID comes back, we can move everything can online.”	Considering future student needs integration of technologies	"changing with the times"
[Even with my in-person classes], depending on the content that we are covering everything is still on the portal. Still do online discussion posts, students need to learn to communicate in different formats, and I can flip the switch to transition, I feel like COVID or something like it is inevitable. It’s not if, but when, everything is on there [the portal], and repetition is good, the more you use it the better you get, and then there be less trouble transitioning next time.”	Considering future student needs integration of technologies	"changing with the times"
I have been teaching online for [many] years. I was scared at first, but now it’s nice... I like to celebrate my students' work, with everything in one place that we can share with everyone. It’s a way we can document our success. A tangible takeaway.”	Comfort Zone	"changing with the times"
Prior to COVID we developed a questionnaire for students, “am I a good candidate to take online classes”, but everything was forced because of COVID.	Barrier-technology	"changing with the times"
Thankfully the online policies were already -we didn’t we would have to use them overnight, we had already a piolet, and business students were in a better position to transfer. We had something to stand on. It was really nice we had a	Considering future student needs integration of technologies	"changing with the times"

base, did we know if they were going to work, no, but we had a base."		
"In my on-site classes, [changed the night we meet and the way the course is structured]. The night we were scheduled to meet, was crazy for everyone, so we changed it. It worked out better for my students, I am adapting to what they need."	student needs	"students as customers"
"...our student base is a lot different than the university. As a Community College in rural MI, we are all really good at adapting to what the students need, as an employee, I will have babies in my office if that means mom can get work done in the computer lab, I will have a baby in my office."	student needs are different	"students as customers"
"After the first semester of COVID, due to family concerns, caring for family members, it was better to stay on Zoom."	student needs are different	"students as customers"
"As an online instructor, I almost felt like I was on call 24/7, students were waiting until Saturday at 2 a.m. to complete an assignment. I am not responding to students at 2 a.m., but first thing on Sunday morning I make sure my students are taken care of. This fatigued on me, and now at least one day a week, I don't check it all, I constantly had my laptop with me... I yell at my kids, "put your phone down" [for many years] years I have had my laptop right next to me, "I thought you didn't have to do homework anymore" but I was responding to students."	students as customers	"students as customers"
"Considering our students as customers, HyFlex meets their needs for busy schedules."	students as customers	"students as customers"
"High school and elementary have the same issues...It will be interesting to see what young students will need or want in the coming years...certificates instead of degrees"	Considering future student needs students as customers-student needs are different	"students as customers"
"HyFlex [subject] works great for a commuter. From a student perspective, as a parent, if we wake too late to make a 2-hour drive, the class doesn't have to be missed. But there is a challenging subject, having an in-person option is also necessary, especially for a slower student so they can get extra time and help."	flexibility	"students as customers"
"I have had to provide alternative methods so my students can go to work. They may miss hearing my sweet tender voice, but we can help by being flexible."	student needs are different	"students as customers"
"I know what worked for me as a student. I graduated [during COVID], I was teaching and going to school, and homeschooling, how did we do it? I don't know but we did. I was there too, dogs barking, kids coming in, most	students as customers	"students as customers"

professors were understanding and accommodating, they knew we were working too.... Zoom fatigue is real.”		
“Most want F2F, but students have had to move before completing their degree, they keep asking when courses will be available completely online”	flexibility-student	“students as customers”
“Online is not for everyone, for others it is perfect.”	students as customers-student needs are different	“students as customers”
“Students can learn time management and other skills, online and in person. Skills that are obtainable, learning how to practice and schedule are not only useful in the classroom but outside of the classroom.”	Student skills	“students as customers”
“There’s more prep for online classes and for online classes, I am always on and answering emails.”	"I am always on and answering emails.”	“students as customers”
Hybrid classes work pretty well, helpful with students who don’t have a babysitter or the ability to drive, this way they attend either way.”	student needs are different	“students as customers”
More workload for faculty, but if you are teaching in person there is no reason you can’t have a zoom link.	students as customers	“students as customers”
“Not every student is meant to be online and not every instructor is meant to teach online.”	students as customers-student needs are different faculty skill set	barriers
"I am adapting to what they need. I have changed the class to provide them with time to work on homework, at least they get the opportunity to get it completed without distraction. If you work better at home, go home. If you are a single mom and have to go home to do laundry, dishes, and dinner, stay here and work. I am right here to answer questions and I give you time in class.”	flexibility-student	barriers
“college has daycare, but finding workers and capacity if nobody is available to work until 9, it can’t be open, this is a problem for the community county at large”	students as customers-student needs are different flexibility-student	barriers
“Durning COVID, I felt like a lot of the focus was on technical difficulties, and took away from the [course content], how can they conduct a presentation when they didn’t know to share a screen? A lot of frustrations around the technology, trying to give a presentation with kids in the background, some things are difficult, computer skills are lacking at the 100 level, and some of our non-traditional students need to be guided. How I am supposed to say,	Barrier-technology	barriers

share your screen with me, when they don't even know how to sign in?"		
"Lack of brand band access, we can provide hot spots, but if there is no cell phone service how do you hot spot? How are going to do an online class? This is a huge barrier."	barrier-technology	barriers
"Maybe it's cultural that students don't ask for help? Pull yourself about by the bootstraps, or maybe I always thought I should just help myself. Maybe some students don't ask for help because are other people going to know I am getting help? Students are starting to use tutor.com. Maybe the anonymity? Maybe the 24 hours a day is good? But if they are not internet savvy, older students, drop out of school early and don't come back."	Barrier-technology Barrier-mental health	barriers
"Mental health is a barrier-we all have a little PTSD."	"mental health is a barrier"	barriers
"Some students need accountability, they show up for every class but don't do the homework, others don't show up but do all of the work, how do you fail one and not the other?"	Student skills	barriers
"Some students need more accountability; they can't work asynchronously. Time management is a problem for many students, they don't ask for help."	Student skills Barrier-technology Barrier-mental health	barriers
"Students don't like to ask for help. Hard to get students to participate. Prior to COVID [students were starting to use the resources that are available to them]. During COVID, students who aren't tech-savvy just disappeared. I don't know if they will ever come back."	Barrier-technology Barrier-mental health	barriers
"Students take online classes, but don't know how to use a computer."	technology barrier	barriers
"Too much choice can be a prison too, some students need more structure and accountability."	"more structure and accountability."	barriers
"Transition during COVID was fine for me, can't say the same for my students...internet, family demands....lack of skill"	Barrier-technology barrier-mental health	barriers
"When COVID started, internet connections were not available for everyone, some would drive to campus to sit in front of the building, so it was a difficult transition for some. Some were overwhelmed. Some left and I don't know if they will ever come back"	barrier-technology	barriers
Employees of the college can take classes for free and receive 4 hours/per week of paid time to complete homework and course assignments	students as customers-student needs are different flexibility-student	barriers

Some students can't even sign into the portal, we can have everything portal, tutorials, etc, but you have to be able to sign in. Sometimes we just need to sit next to them."	technology barrier	barriers
"[Some students] have been incarcerated [for a very long time] and have not been able to use a computer."	technology barrier	barriers
If I was 18 and COVID happened, I don't think I would have done very well [in college]. What about the younger students, the ones who are 5, 6, or 7? It will be interesting to see what the COVID students will want. "	Considering future student needs	COVID students
What will happen when [Kindergarten] "COVID-generation hits higher education? What will they want?"	Considering future student needs students as customers-student needs are different	COVID students

Appendix E



Keweenaw Bay Ojibwa Community College Institutional Review Board

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IRB Decision Letter

Project Title: HyFlex General Biology Lab Class, Student Satisfaction, and Self-efficacy

Applicant: Sandra Adams
sandy.adams@gmail.com

Date of review: 8-29-2022
11:30 AM to 12:00 PM
Conducted via Zoom

IRB panel: Andrew Kozich, Ph.D. (Chair)
Denise Cadeau*
Tashina Emery*
Karen Colbert
Paula Roth

*Enrolled KBIC member

Materials reviewed: IRB survey application, drafts of three surveys, informed consent form

Decision of IRB (decision noted below in bold):

- Approval – the project may proceed as presented.
- **Conditional approval – the project may proceed with required changes in procedures or documents. The required changes must be clearly specified in writing.**

Sandra is approved to continue with her research as proposed. The IRB requests that she continue working with KBOCC faculty colleague Karen Colbert (and other interested IRB panelists) to develop specific language describing the meaning of "Native American" for her research purposes. We would like the language to be culturally appropriate, progressive, and used consistently over the entirety of Sandra's research (including all products/publications that result from it).

- Revise and resubmit for approval – specified procedures or documents must be revised and re-reviewed before the project may proceed.
- Denied – the project may not proceed under KBOCC auspices.

Thank you for presenting your research proposal to the KBOCC Institutional Review Board. Comments from IRB panelists are on the attached documents. Good luck with your research and please do not hesitate to contact me for further assistance.

Kindest regards,

Andrew T. Kozich, Ph.D.
Environmental Science Dept. Chair
Institutional Review Board Chair
andrew.kozich@kbocc.edu

Appendix F

Glossary

Active interview. Considers the interviewer and interviewee as equal partners in constructing meaning around an interview event (Holstein & Gubrium, 1995).

Distance education. The method of teaching where the student and teacher are physically separated uses a combination of technologies that use computers and the Internet as the delivery mechanism with at least 80% of the course content (Kentor, 2015).

Distance education course. A course in which the instructional content is delivered exclusively via distance education (Seaman et al., 2018).

Distance education program. A program for which all the required coursework for program completion is able to be completed via distance education courses (Seaman et al., 2018).

Essential worker/Frontline essential worker. Workers in grocery stores, public transportation, agriculture, health care, front line, daycare, retail, among other sectors often performed by low-wage workers (“Wage and Hour Division Overview”, 2021).

Human Capital. Refers to the knowledge and characteristics a person has that can contribute to their ability to be productive (Acemoglu & Autor, 2011).

Inclusion. The tackling and overcoming of the intended or unintended patterns of marginalization toward students that have traditionally been excluded (Friend & Burnsuck, 2019)

Non-traditional adult learner. Non-traditional adult students are likely to have one or more of the following seven characteristics: delay enrollment after high school in postsecondary

education, attend part-time, are financially independent, work full-time while enrolled, have dependents other than a spouse, are single parents, lack a standard high school diploma (Timarong et al., 2003).

Online education. Students use various technologies, tools, and applications to interact with instructors, content, and other students (Harasim, 2000).

Pandemic. An epidemic that has spread over several countries or continents, usually affecting a large number of people (CDC, 2022).

Panic-gogy. Transition pedagogy as a result of COVID-19 (Kamenetz, 2020).

Self-directed Learning. A process in which individuals take the initiative to learn the material, formulate goals, and identify the resources available to them as they learn concepts that are directly related to their lives (Knowles et al., 2020).

Self-efficacy. A person's belief that they are capable of achieving goals (Crain, 2021).

Synchronous learning. This type of learning is scheduled and simultaneous in real-time, allowing students to immediately communicate with their peers and instructors (Francescucci & Rohani, 2019).

Full-time semester enrollment. College students enrolled in 9 credit hours per semester (Hilton, 2016).

Open Educational Resources. Cronin (2017) defines OER's as "a broad descriptor of practices that include the creation, use, and reuse of open educational resources as well as open pedagogies and open sharing of teaching practices" (p. 16).

“The Top 50”. Almost half of the distance education students are concentrated in just five percent of institutions (Seaman et al., 2018).

Work-Life Balance. The balance between personal and academic components of students’ lives, which has been identified as helpful for successful degree completion and subsequent placement in the academic profession (Brus, 2006).

Zoom. A software package used for videoconferencing (Bailenson, 2021).

Zoom Fatigue. Also referred to as videoconferencing fatigue (VC). Feelings of exhaustion after extended use of videoconferencing tools (Bailenson, 2021).